

**NOWPAP-TEMM Joint Workshop on Marine Litter Management  
and  
2019 NOWPAP International Coastal Cleanup (ICC)**

Dalian, the People's Republic of China, 24-25 September 2019

**Tuesday, 24<sup>th</sup> September 2019: NOWPAP-TEMM Joint Workshop on Marine Litter  
Management**

**Venue: Conference Room 1, Dalian International Finance Conference Center**

**Organizer:** Ministry of Ecology and Environment of China  
NOWPAP Regional Coordinating Unit (RCU)

**Co-organizer:** Chinese Research Academy of Environmental Sciences  
Dalian Ecology and Environment Bureau  
National Marine Environmental Monitoring Center of China

**Supporter:** Dalian Metropolitan Government

08.30 – 09.00	<b>Registration</b>
09.00 – 09.30	<b>Opening Ceremony</b>
	<p>Dr. Xiangbin PEI, Director, Department of Marine Ecological Environment, Ministry of Ecological Environment, China</p> <p>Mr. Haibing Zhang, Deputy Secretary General of Dalian Metropolitan City Government, Director of Dalian Ecology and Environment Bureau, China</p> <p>Dr. Ning LIU, Programme Officer, NOWPAP Regional Coordinating Unit</p> <p><b>Group Photo</b></p>

**UNEP Northwest Pacific Action Plan (NOWPAP)**

**Toyama office:**

5-5 Ushijimashin-machi,  
Toyama 930-0856, Japan

Tel. (81-76)-444-1611; Fax (81-76)-444-2780

**Busan office:**

152-1 Haean-ro, Gijang-up,

Gijang-gun, Busan 619-705, Republic of Korea

Tel. (82-51)-720-3000; Fax (82-51)-720-3009

<p><b>Session 1. Progress on Marine Litter Management in the NOWPAP Region</b></p> <p>(Speakers will present policy changes, updated statistics, investment, new approaches in preventing, monitoring and removing marine litter) Presentations of 20 mins followed by Q&amp;A 10 mins</p> <p><u>Chair: Dr. Ruizhi LIU</u>, Chinese Research Academy of Environmental Sciences</p>	
09:30 – 10:00	<p><i>Progress in addressing marine litter in China</i></p> <p>Dr. Ruizhi LIU, State Environmental Protection Key Laboratory of Estuarine and Coastal Environment, Chinese Research Academy of Environmental Sciences</p>
10:00 – 10:30	<p><i>Progress in addressing marine litter in Japan</i></p> <p>Mr. Tatsuya ABE, Deputy Director , Office of Marine Environment, Water Environment Division, Environmental Management Bureau, Ministry of the Environment, Japan</p>
10:30 – 10:50	<b>Coffee break</b>
10:50 – 11:20	<p><i>Progress in addressing marine litter in the Republic of Korea</i></p> <p>Mr. Ju Young PARK, International Affairs Specialist, Korea Marine Environment Corporation</p>
11:20 – 11:50	<p><i>Progress in addressing marine litter in the Russian Far East</i></p> <p>Dr. Daria Zadoya., Associated professor of The Department of Oil and Gas Industry Safety Maritime State University named after admiral G.I. Nevelskoy</p>
11:50 – 12:30	<p>Roundtable discussion on challenges and countermeasures in addressing marine litter at national level</p> <p>The speakers in this session will be invited to the stage again and the discussion will focus on:</p> <ol style="list-style-type: none"> <li>1. Gaps and challenges;</li> <li>2. Data collection and information sharing</li> <li>3. Engaging NGOs and private sectors</li> </ol>
12:30 – 14:00	<b>Lunch break</b>
<p><b>Session 2. Improve Waste Management to Reduce Waste Leakage into the Marine Environment</b></p> <p>(Speakers will present : 1. Legislation, regulations and action plan on waste management; 2. Use of fiscal and financial instruments to improve waste management; 3. Best practices and Lessons Learned)</p> <p>Presentations of 20 mins followed by Q&amp;A 10 mins</p> <p><u>Chair: Mr. Keith Alverson</u>, Director, International Environmental Technology Centre, United Nations Environment Programme (TBC)</p>	



14:00 – 14:30	<i>Improve waste management to address marine litter in China</i> Dr. Qingjia MENG, Chinese Research Academy of Environmental Sciences
14:30 – 15:00	<i>Improve waste management to address marine litter in Japan</i> Mr. Tatsuya ABE, Deputy Director, Office of Marine Environment, Water Environment Division, Environmental Management Bureau, Ministry of the Environment, Japan
15:00 – 15:30	<i>Improve waste management to address marine litter in the Republic of Korea</i> Dr. Sora YI, Head/Division of Living Environment Research Korea Environment Institute (KEI)
15:30 – 15:50	<b>Coffee break</b>
15:50 – 16:20	<i>Improve waste management to address marine litter in the Russian Federation</i> Dr. Sergey MONINETS, Dean of the Department of ecological safety and shelf development Maritime State University named after admiral G.I. Nevelskoy
16:20 – 17:30	The speakers in this session will be invited to the stage again and the discussion will focus on: <ol style="list-style-type: none"> <li>1. Challenges in waste management including waste sorting, collection, and disposal;</li> <li>2. Countermeasures, public participation, role of governments, private sectors and etc.</li> <li>3. Enforce regulations</li> </ol>
18:30 – 20:00	<b>Reception</b>
<b>Wednesday, 25<sup>th</sup> September 2019</b>	
<b>Session 3. Further Enhance Regional Cooperation in Addressing Marine Litter</b>	
(Speakers will update global and regional approaches and opportunities to address marine litter) Presentations of 15 mins followed by Q&A 5 mins <u>Chair:</u> NOWPAP RCU	
09:00 – 09:20	<i>UN Environment response to marine litter: Progress since the last NOWPAP-TEMM Workshop in 2018</i>  Mr. LIU Ning, NOWPAP RCU, UN Environment Programme
09:20 – 09:40	<i>Updates of UN Environment International Environmental Technology Centre (IETC) including the reports on the effectiveness of single use plastic legislation (2018) and Waste to Energy solutions (2019)</i>

	Mr. Keith ALVERSON, Director, International Environmental Technology Centre, United Nations Environment Programme
09:40 – 10:00	<i>Address marine litter in Southeast Asia countries</i>  Ms. Natalie HARMS, Associate Programme Officer, Secretariat of the Coordinating Body on the Seas of East Asia (COBSEA), United Nations Environment Programme Regional Office for Asia and the Pacific
10:00 – 10:20	<i>Promotion of Trilateral Environmental Cooperation and Roles of Trilateral Cooperation Secretariat</i>  Ms. Huang Wandu, Economic Affairs Officer, Department of Economic Affairs, Trilateral Cooperation Secretariat
10:20 – 10:40	<b>Coffee break</b>
10:40 – 11:00	<i>Asian Regional overview of marine litter and marine litter hotspot assessment methodology</i>  Mr. Jinhua Zhang, Programme Officer, United Nations Environment Programme Regional Office for Asia and the Pacific
11:00 – 11:50	Roundtable discussion: further enhance regional cooperation in addressing marine litter  Speakers in this session will be invited to the stage. The discussion will focus on 1. Synergy opportunities to address marine litter in the region; 2. Data collection and sharing
11:50 – 12:00	<i>Introduction of ICC</i> Mr. Dawei SONG, Dalian Ecology and Environment Bureau

12:00 – 13:00

**Lunch Break**

**13:00 – 17:00**

**International Coastal Clean-up (ICC) at No. 1 Yingbin Road, Zhongshan District, Dalian**

13:00 (sharp)

Bus leaves the hotel for ICC 2019

Ca. 13:30 – 14:00

Opening remarks and introduction to ICC  
NOWPAP RCU  
Dalian representative

14:00 – 16:30

Beach clean-up (all participants) and group photo

16:30

Bus returns to the hotel

A faint, light gray world map is centered in the background of the top half of the slide.

# **Progress in marine waste management by the Chinese government**

**Ruizhi Liu (NOWPAP ML FP of China )**

**2019 NOWPAP-TEMM Joint Workshop on Marine Litter  
Management**

**September 23, 2019 Dalian , China**



# ♥ Contents



2018年  
中国海洋生态环境状况公报

---

01

China's Marine Litter Data 2018

02

The Works of Chinese Government

中华人民共和国生态环境部  
2019年5月





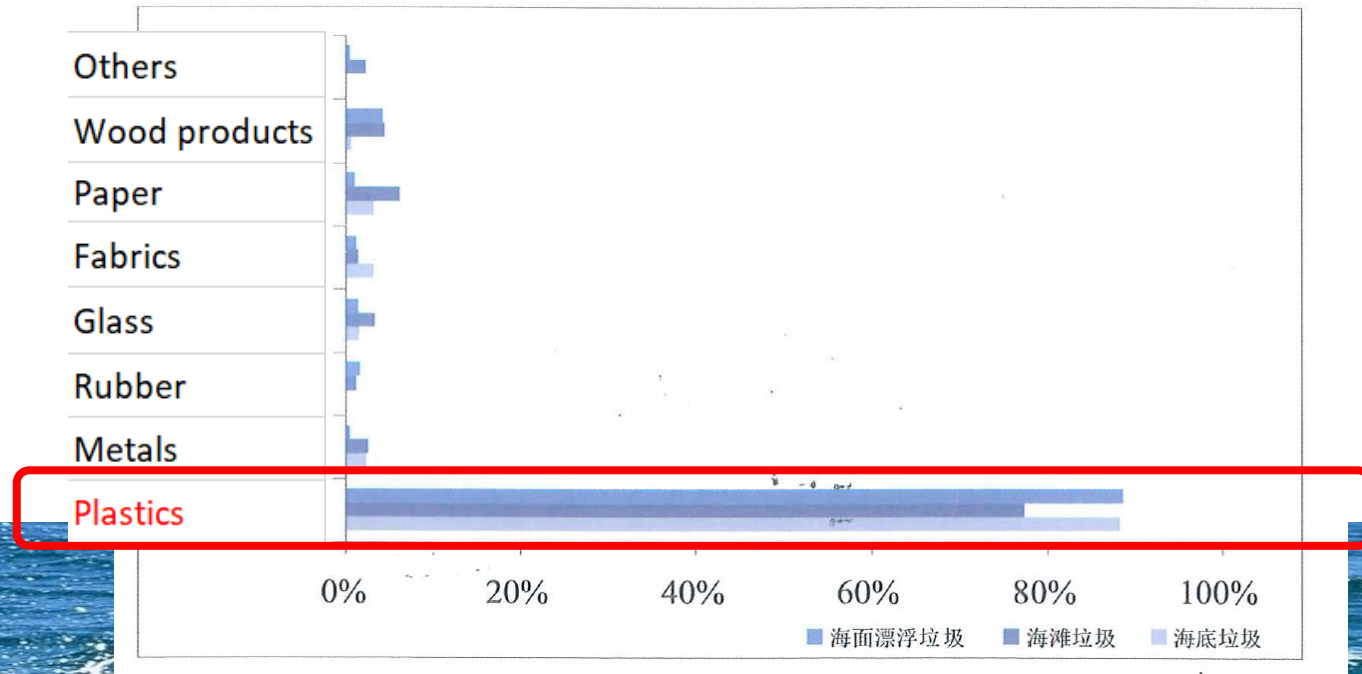
# China's Marine Litter Data of 2018



海洋垃圾数量分布(个/平方千米)柱状图以数值密度的对数值(log<sub>10</sub>)表示,“0”表示监测区域未监测到海洋垃圾  
 ■ 海面漂浮大块和特大块垃圾 ■ 海面漂浮中块和小块垃圾 ■ 海滩垃圾 ■ 海底垃圾

2018年监测区域海洋垃圾数量分布图

- In 2018, marine litter monitoring was carried out in 57 areas, including the types and quantities of floating, beach and seabed litter. The areas with high marine waste density are mainly distributed in tourist and recreation areas, agricultural and fishery areas, port shipping areas and adjacent sea areas.



# ♥ Contents



2018年  
中国海洋生态环境状况公报

---

01

China's Marine Litter Data 2018

02

The Works of Chinese Government

中华人民共和国生态环境部  
2019年5月



# 1. Comprehensive governance in Bohai



The battle of prevention and control of pollution (2018-2020)

**Comprehensive governance in Bohai** is the only integrated management plan for the sea in the national pollution battle.

- Defence of the blue sky
- Pollution control of diesel truck
- Treatment of black and smelly water bodies in cities
- **Comprehensive governance in Bohai**
- Protection and restoration of the Yangtze River
- Protection of water source
- Pollution control in agricultural and rural areas

♥ Including the removal solid waste in the coast area and in the near shore of Bohai



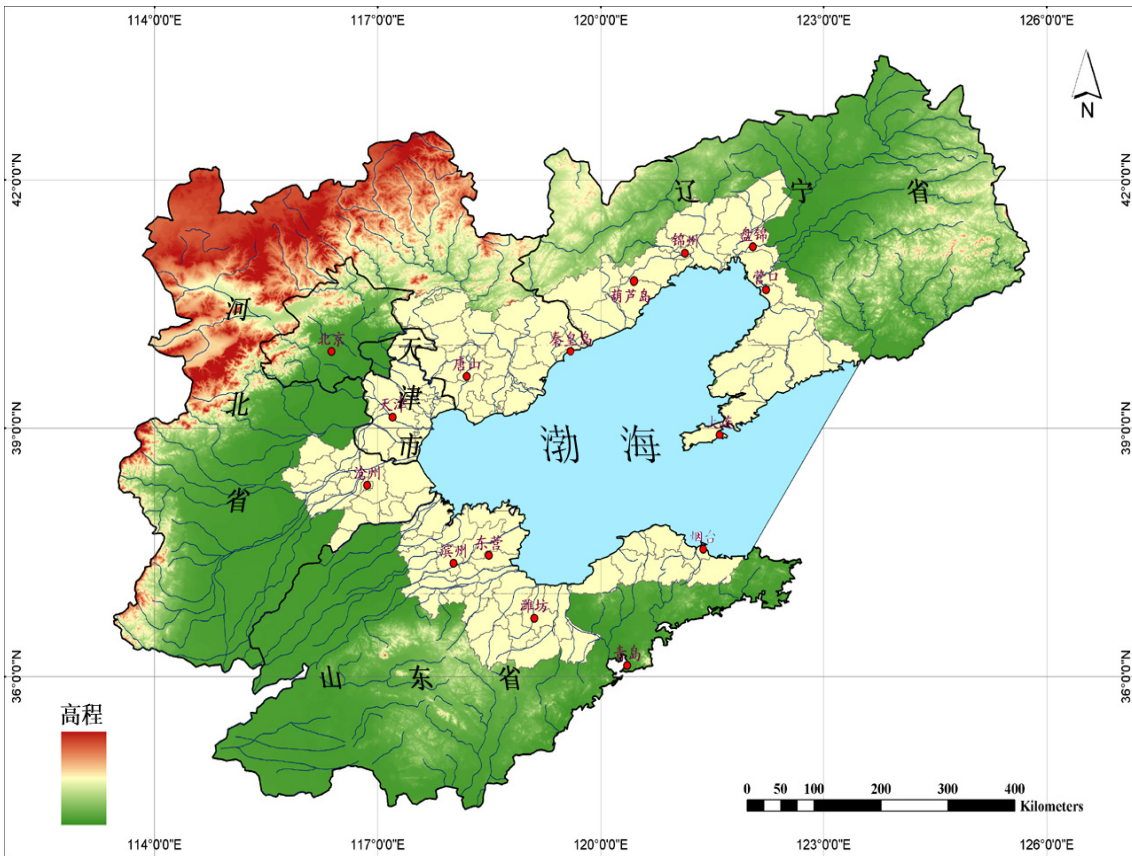


# 1. Comprehensive governance in Bohai

## Governance goal



- **By the end of 2019**, all coastal cities will have set up a mechanism for sorting garbage and "sea sanitation", completed the removal of domestic waste within a certain range along the coast, implemented a garbage classification system, and had the capacity of marine litter disposal.
- **By the end of 2020**, the normalization of waste in the sea-going rivers and near-shore waters have to be established.





## 2.Zero-Waste city

11+5

11个无废城市分布情况

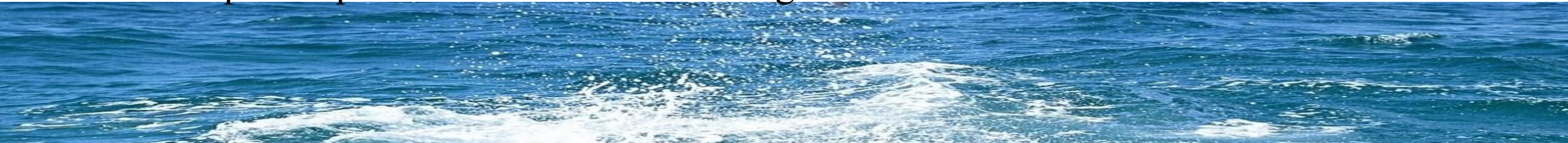


- Choose about 10 cities with conditions, foundation and appropriate scale throughout the country,
- and carry out the pilot project of "Zero-waste city" construction in the whole city.
- **By 2020**, we will systematically build an indicator system for the construction of "Zero-waste cities", explore and establish a comprehensive management system and technical system for the construction of "Zero-waste cities",
- and form a number of replicable and popularizable demonstration models for the construction of "Zero-waste city".

### 3. Plastic ban Feb. 2019——Hainan Province

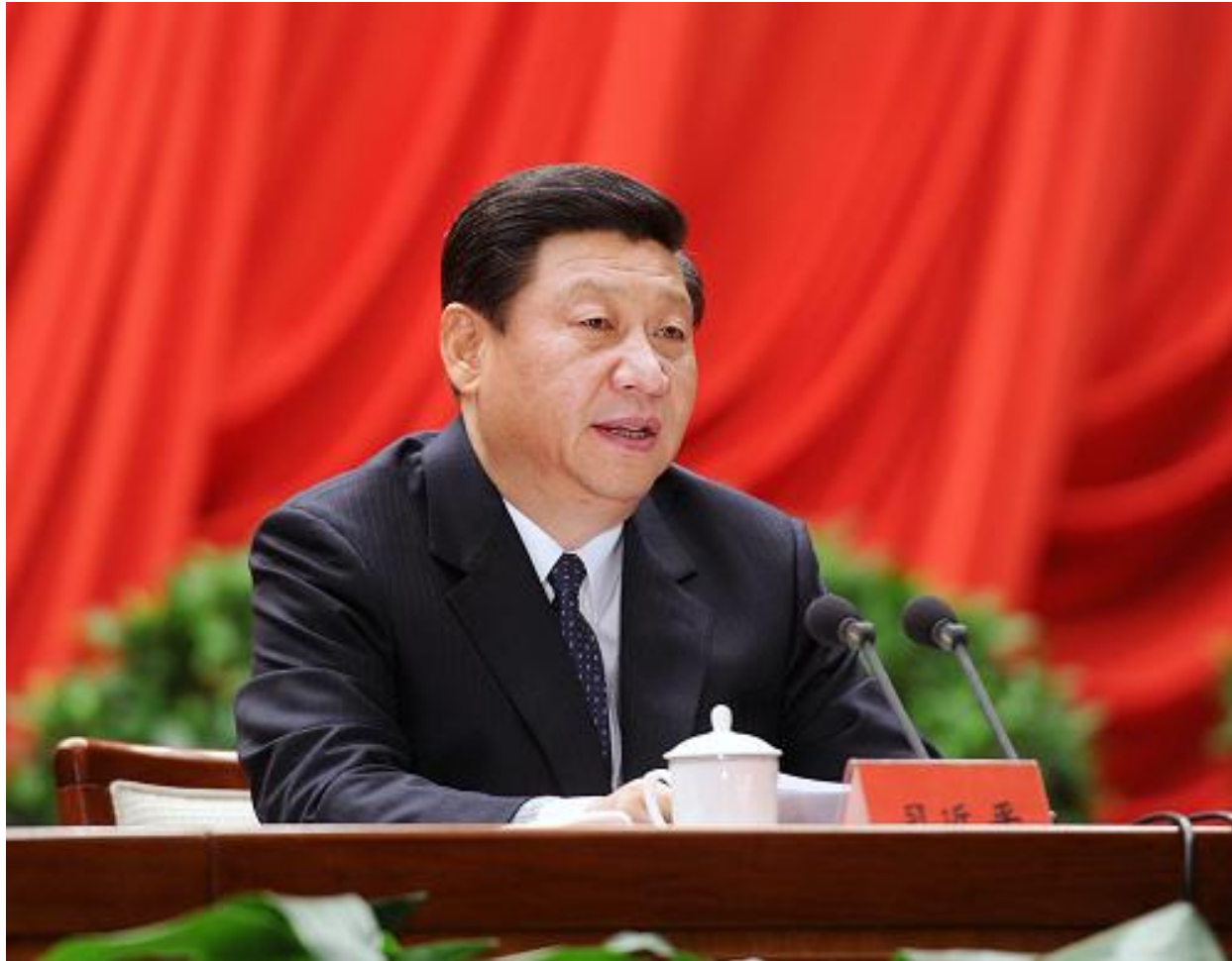


- **By the end of 2019**, establish and improve the local laws and standards system prohibiting the production, sale and use of disposable non-degradable plastic products, improve the supervision and law enforcement system, and form the supply capacity of alternative products.
- **By the end of 2020**, The province is completely banned from the production, sale and use of disposable non-degradable plastic bags and plastic tableware.
- **By the end of 2025**, The province has completely banned the production, sale and use of plastic products listed in the Catalogue.





## 4. The waste sorting work of Chinese Government



**June 3, 2019, President Xi Jinping made important instructions on waste sorting works:**

- To cultivate a good habit of garbage sorting.
- To make efforts to improve the living environment.
- To contribute to the sustainable development of green development.



# 5.Waste sorting ——Shanghai



 厨余垃圾 Kitchen waste	 可回收物 Recyclable	 有害垃圾 Harmful waste	 其它垃圾 Other waste
 过期食品	 旧鞋	 杀虫剂 气雾剂	 废纸巾
 果核	 书报 杂志 报纸	 旧电器 电子产品	 瓦片
 残花	 玻璃瓶 塑料瓶	 油 漆 水银产品	 纸屑 卫生巾
 剩菜	 旧鞋	 药品 化妆品	 砖头
 鱼骨	 书报 杂志 报纸	 日用化学品	 烟头
 果皮	 玻璃瓶 塑料瓶	 充电电池 纽扣式电池	 骨头

From July, 1, 2019, Shanghai officially implemented the strictest regulations on the classification of domestic wastes. It is called **the strictest garbage classification rule in history**. No disposable toothbrush was provided when you check in the hotel in Shanghai.





***Thank you !***



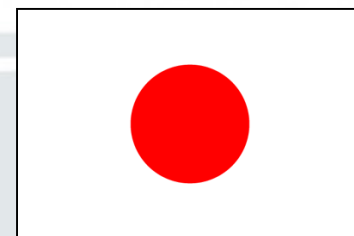
# Progress in Addressing Marine Litter in Japan

September 24<sup>th</sup>, 2019

Office of Marine Environment, Ministry of the Environment



Ministry of the Environment





# Predictions of future amounts of microplastics floating in the ocean



- With the support of the Ministry of the Environment of Japan, a joint research team led by Kyushu University which reproduced observation results from the past to the present using computer simulations also **predicted future amounts of microplastics floating in the upper ocean layer over the Pacific Ocean for up to 50 years ahead** as shown below.
- Although microplastics have previously been predicted to increase in the future, this study has scientific prediction quantitatively.

- If current plastic ocean outflow trends continue, it has been shown that in Japan and the central part of the North Pacific, **the amount of microplastics will double by 2030 and quadruple by 2060 compared to the present**.
- This study is **the first in the world** to predict amounts of floating microplastics.
- A paper summarizing these results has been **published in Nature Communications**※.



Photo: Floating microplastics collected during Pacific Ocean observation

※ The world's 7th most influential/cited academic journal

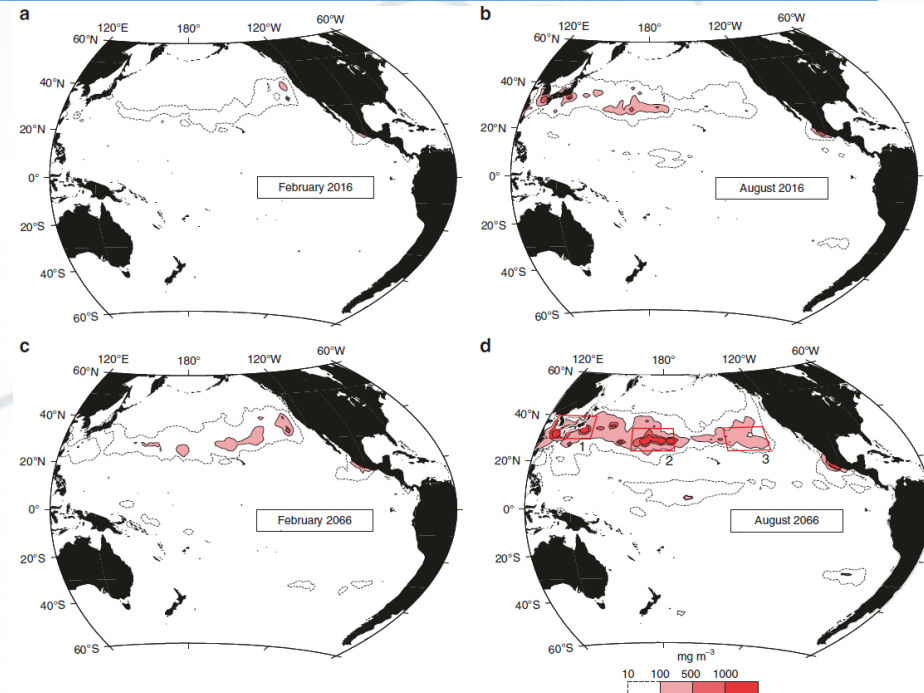
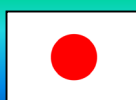


Figure: Calculated results of weight concentrations ( $\text{mg}/\text{m}^3$ ) of microplastics averaged in February (a) and August (b), 2016, and February (c) and August (d), 2066 at the sea surface.

Reference: Isobe et al. (2019)



## Osaka Blue Ocean Vision

- The G20 leaders **shared a common global vision**
- They requested other members of the international community to share their vision

They produced advice and requests for cooperation through local governments, fisheries organizations, etc.: “Recognizing the important role of plastics in society, while reducing litter from mismanaged plastics through improved waste management and innovative solutions **We aim to reduce the additional pollution from marine plastic litter to zero by 2050 through a comprehensive life-cycle approach.**”



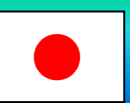
## G20 Implementation Framework for Actions on Marine Plastic Litter

- The G20 ministers adopted the following requests at the Ministerial Meeting on Energy Conversion and Global Environment for Sustainable Growth
  - (1) For each G20 country to implement the following **voluntary initiatives** for **sharing and updating effective measures and results**
    - ① Proper waste management,
    - ② Recovery of marine plastic litter,
    - ③ Development of innovative solutions (innovation),
    - ④ International cooperation for capacity building in each country
  - (2) For the G20 countries to cooperate to
    - ① international cooperation,
    - ② promote innovation,
    - ③ share scientific knowledge,
    - ④ engage in dialogue with various stakeholders to raise their awareness and expand this awareness to counties beyond the G20
- The above has been approved by the G20 leaders

## G20 Resource Efficiency Dialogue

- Use of these meetings as a chance to share the results of using the implementation framework
- Agreement to formulate a roadmap for the G20 resource efficiency dialogue at the ministerial meeting in Karuizawa City. This agreement was also approved at the summit.





## Facilitation of effective implementation of the 'G20 Marine Litter Action Plan'

- G20 countries will **promote a comprehensive life cycle approach** through **appropriate waste management**, marine plastic litter **collection**, development of innovative solutions (**innovation**), international cooperation for capacity building in each country, etc.
- G20 countries will **continue to share and update** information on policies, plans, measures, etc. regarding marine plastic litter, **utilizing opportunities such as G20 resource efficiency dialogues**.



## Collaborative Actions and Outreach of Implementation o

- Sharing scientific knowledge  
(Measuring and monitoring the current status and impact of marine litter etc. Strengthening the scientific foundation)
- Promoting international cooperation
- Promoting innovative solutions
- Multi-stakeholder involvement and awareness raising





1. Meeting schedule: From March 11 to March 15, 2019
2. Venue: Nairobi, Kenya
3. Participating countries and organizations: **Representatives of 173 countries and related international organizations attended**
4. Deliverables:
  - Ministerial Declaration ‘Environmental Issues and Innovative Solutions for Sustainable Consumption and Production’  
(Based on a proposal by Japan and other countries)
  - **Resolution on ‘Marine Plastic Litter and Microplastics’**
  - Resolution on ‘Innovative Pathways to Achieve Sustainable Consumption and Production.’ A total of 23 resolutions were adopted.

## **Resolution on ‘Marine Plastic Litter and Microplastics’** (Overview)

- ① Request for immediate strengthening of scientific and technological knowledge with regard to marine litter including marine plastic litter and microplastics.
- ② Decision to strengthen coordination and cooperation through a multi-stakeholder platform within UNEP, to take immediate action towards the long-term elimination of litter and microplastic discharges into the oceans through a life-cycle approach .
- ③ Decision to extend until UNEA-5 the mandate of the Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics .



# Overview of marine litter in Japan



Nagasaki Pref. (Tsushima Is. )



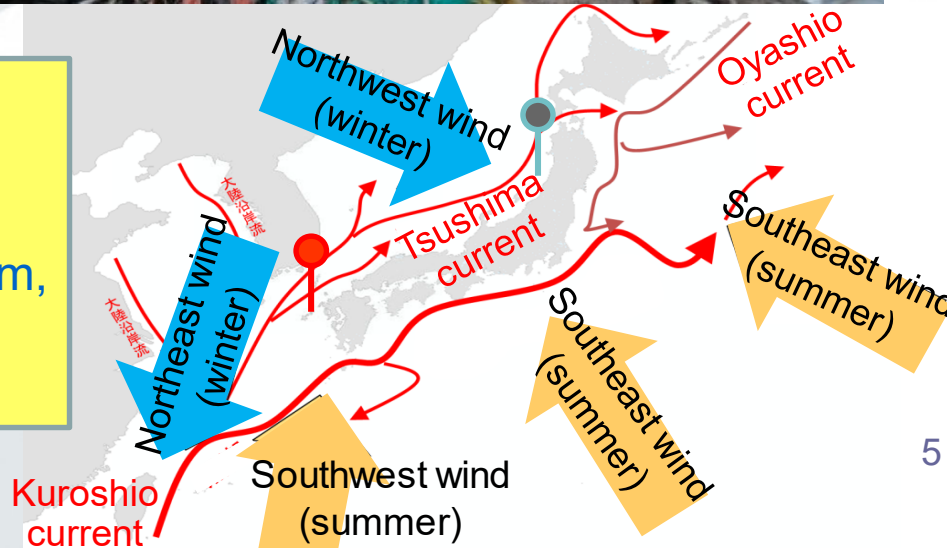
Yamagata Pref. (Tobishima Is.)



## 【Damage caused by marine litter】

Bad effects on:







Marine Environments, Beautiful Beaches—Tourism, Ecosystems, Fishery Operations, Ship Navigation etc.





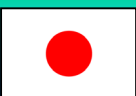


- This action plan organizes Japanese initiatives and efforts **aiming to reduce additional pollution by plastics.**
- The Japanese government will focus on **“how to control the outflow of plastic litter into the ocean”** through a comprehensive life-cycle approach that includes reducing the discharge of mismanaged plastic litter by improved waste management and innovative solutions while recognizing the important role of plastic in society and for sustainability.

Countermeasures	
① Thoroughly promoting proper waste management systems	
② Preventing littering, illegal dumping and unintentional discharge of litter into the ocean	
③ Collecting scattered waste on land	
④ Removing plastic litter from the ocean	
⑤ Innovating through development and conversion of alternative materials	
⑥ Collaborating with stakeholders	
⑦ Cooperating internationally to promote measures in developing countries	
⑧ Understanding actual conditions and accumulating scientific knowledge	



While promoting and developing Japanese best practices (experience, knowledge and technology) internationally, the Japanese government will take the lead in addressing marine plastic litter effectively to realize a world without additional plastic pollution.



Act on Promoting the Treatment of Marine Debris Affecting the Conservation of Good Coastal Landscapes and Environments to Protect Natural Beauty and Variety

**The Government:  
a promotion council for marine litter policy is set up within the government**



Cooperation under the Promotion Council of Marine Litter Policy

The Ministry of the Environment:

- Provides the secretariat to the Council to manage its affairs
- Is responsible for management of marine litter (excluding matters related to other ministries)
- Is responsible for waste management (Waste Management and Public Cleaning Act, etc. ) and establishing a sound material-cycle society (including promoting recycling systems, etc.)

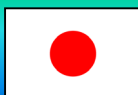
**Ministry of Economy, Trade and Industry**  
**Industrial activities**

**Ministry of Agriculture, Forestry and Fisheries**  
**Fishery-based litter, trees from mountains**

**Ministry of Land, Infrastructure, Transport and Tourism**  
**Riverside litter, debris in ports and sea route areas**

**Japan Meteorological Agency**  
**Research on plastic debris**

**Japan Coast Guard**  
**Public awareness of marine environment conservation**



Subsidy to local governments for cleaning up coasts, reducing generation of litter, etc.

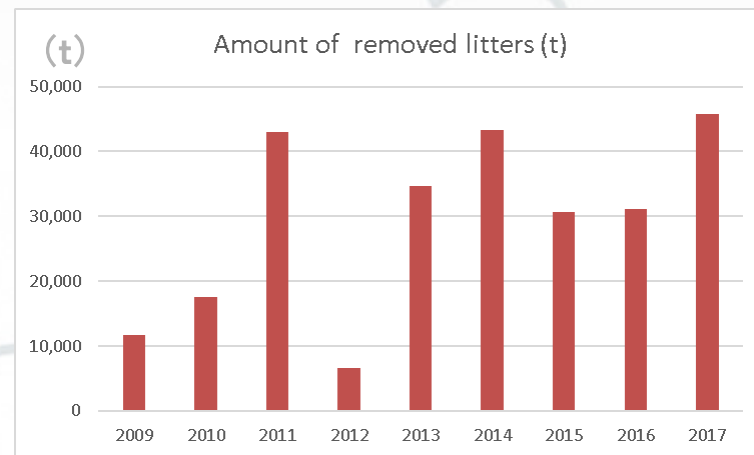
## National Budget



### Results of the Government of Japan's subsidized project for cleaning up coasts in Japan

2009 - 2012	About	<b>54 million US\$</b>
2013 - 2014	About	<b>91 million US\$</b>
2015	About	<b>26 million US\$</b>
2016	About	<b>27 million US\$</b>
2017	About	<b>28 million US\$</b>

US\$1 = JY110



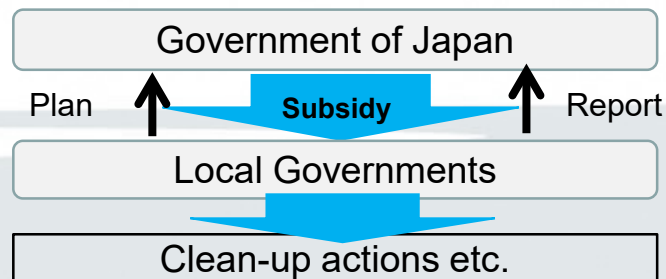
❑ Subsidy can be used for

**Cleaning up coasts**

**Reducing litter generation**

❑ From 2015, removal of **floating** and **sea bed-litter** was added to the subsidy menu.

### Flow of Subsidy

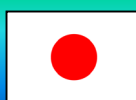




## Prime Minister's remarks at a ministerial meeting related to the marine plastic litter action plan (5/31)

“Marine plastic litter is the biggest theme of this year's G20 Osaka Summit...It is necessary for Japan to make every possible effort, including strengthening the collection and disposal of marine litter...through a wide range of cooperation from fishermen.”

- The Ministry of the Environment in cooperation with the Fisheries Agency issued a notice for local governments and fishermen to work together. (6/4)
- At present, there are discussions on how to cooperate in each region.
- The Ministry of the Environment supports joint efforts by the local government and fishermen through subsidies.



## Fisheries Agency

Request fishermen to cooperate and provide them with advice through local governments and fisheries organizations

cooperation

## MoEJ

Request local governments for their support with projects for promoting regional measures against marine litter washing up on local beaches

Discuss how to implement these measures, with stakeholders including local fishermen, to establish a system for collecting and disposing of marine litter

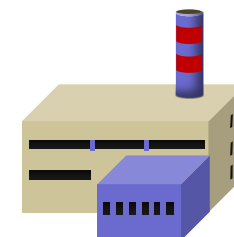
## Fishermen

## Local Governments

### Example of acceptance and processing system



Carry back marine litter collected during operations



Dispose of retrieved marine litter





# Survey to monitor marine litter (language of labels on PET bottles) (FY2017)

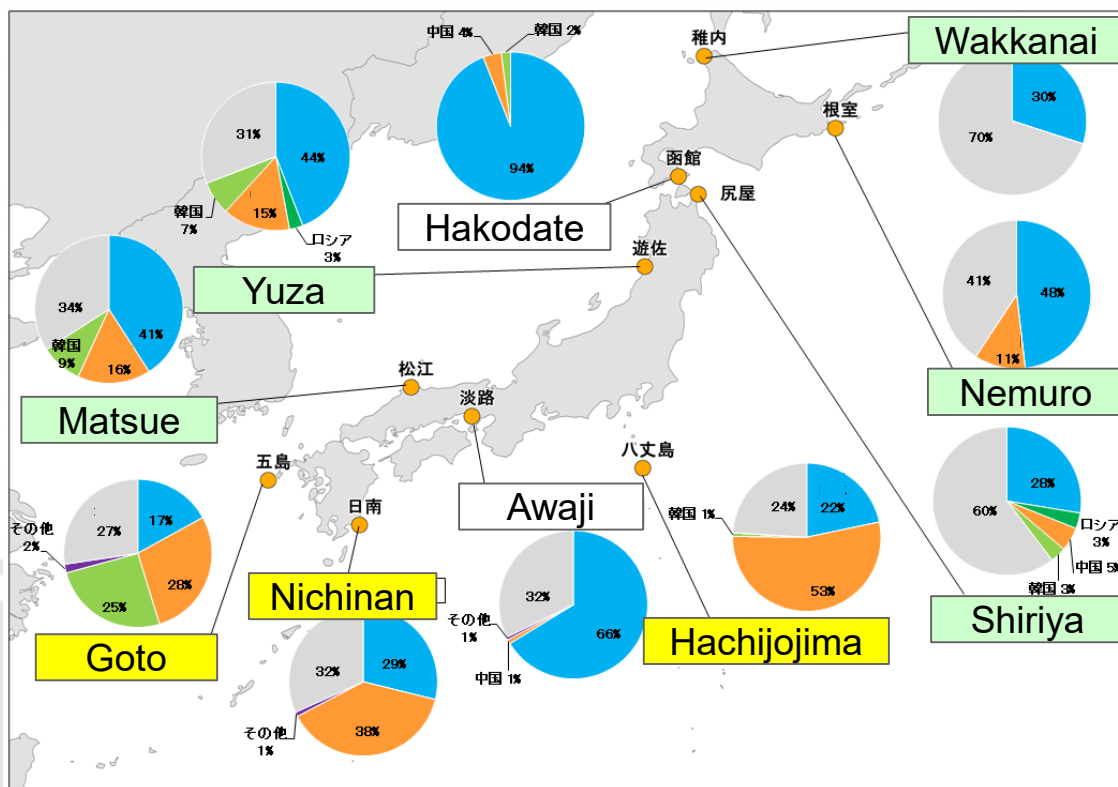


Collected plastic bottles were classified according to language notation at 10 sites nationwide where the survey was conducted in 2017.

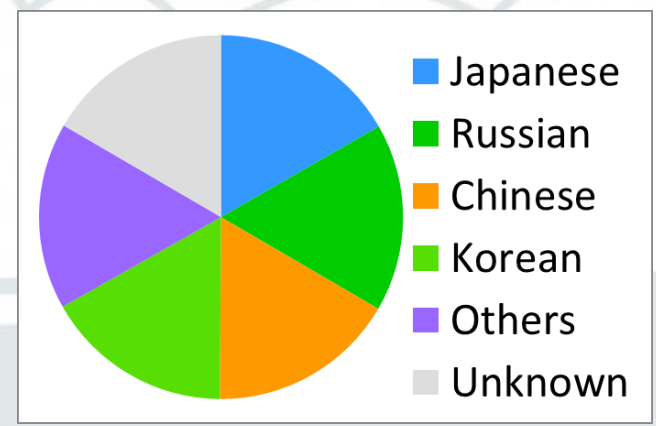
Foreign language PET bottles were found at all 10 locations.

Excluding bottle of unknown origin,

- Foreign languages were found on more than 50% of bottles at the Hachijojima, Goto, and Nichinan sites.
- On the other hand, Japanese was found on more than 60% of bottles at the Wakkanai, Nemuro, Shiriya, Yuza and Matsue sites.
- Foreign languages were found on less than 10% of bottles at the Hakodate and Awaji sites.



## Languages on the labels of PET bottles (survey in 2017)





## Offshore vessel survey of floating microplastics

The Ministry of the Environment carried out an **offshore survey of floating debris** in collaboration with **Tokyo University of Marine Science and Technology** in July to October, 2015. The purpose of **this survey was to grasp the actual state of floating microplastics.**



Umitaka-maru

東京海洋大学

microplastics floating around Japan



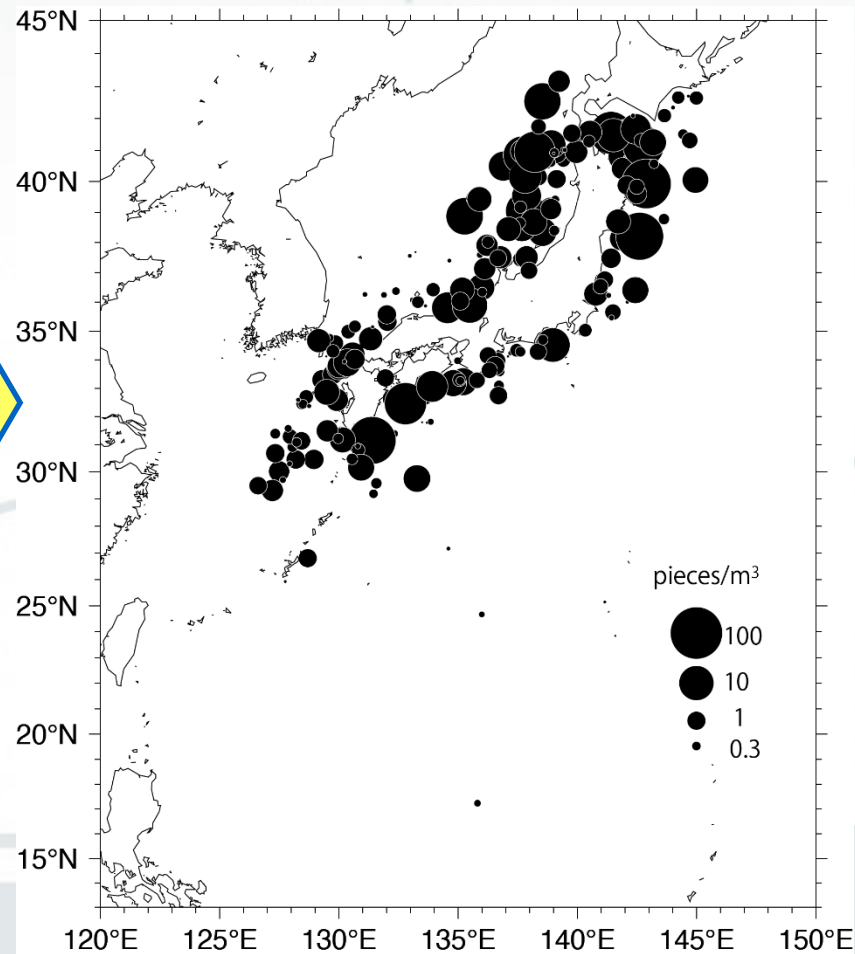
Plankton net



Pieces of microplastics



## Microplastic density distribution map around Japan from FY2014 to FY2017





- In FY2017, we surveyed more marine areas with the participation of additional universities.
- We observed floating marine debris and microplastics in the northwestern part of the Pacific Ocean as well as in areas surrounding Japan using five research vessels, in cooperation with Hokkaido University, Nagasaki University and Kagoshima University in addition to Tokyo University of Marine Science and Technology and Kyushu University.

**Research vessel (RV) Nagasaki-Maru**  
owned by  
Nagasaki  
University



**RV Oshoro-Maru**  
owned by  
Hokkaido University



**RV Umitaka-Maru and RV Shinyo-Maru**  
owned by  
Tokyo University of Marine  
Science and Technology



**RV Kagoshima-Maru**  
owned by  
Kagoshima University





MOEJ published “The Guidelines for Harmonizing Ocean Surface Microplastic Monitoring Methods” in May of this year.

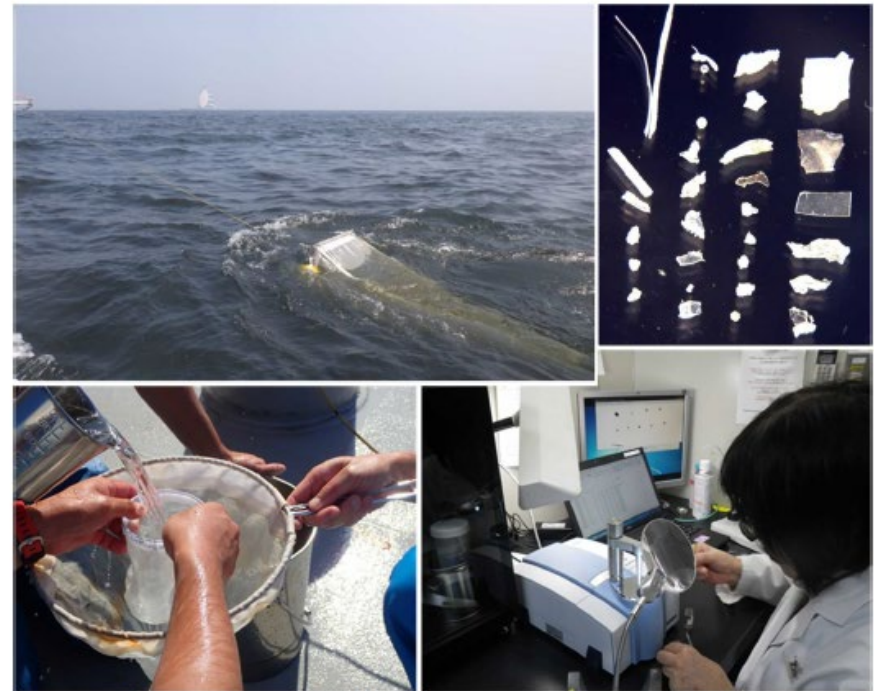
The Guidelines is available on the MOEJ website and Ocean Best Practice website.

URL of guidelines is here

[http://www.env.go.jp/en/water/marine\\_litter/guidelines/guidelines.pdf](http://www.env.go.jp/en/water/marine_litter/guidelines/guidelines.pdf)

## Guidelines for Harmonizing Ocean Surface Microplastic Monitoring Methods

Version 1.0, May 2019



Ministry of the Environment, JAPAN  
May, 2019

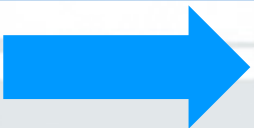




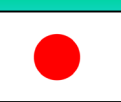
## Background

- Marine litter, including microplastics, is a very urgent matter. Measures against marine litter and microplastics need to be considered and taken, based upon scientific knowledge.
- Understanding the actual state of marine litter is important.
- Comparing reported microplastic abundances, however, is difficult at present due to variations in monitoring methods.

Required

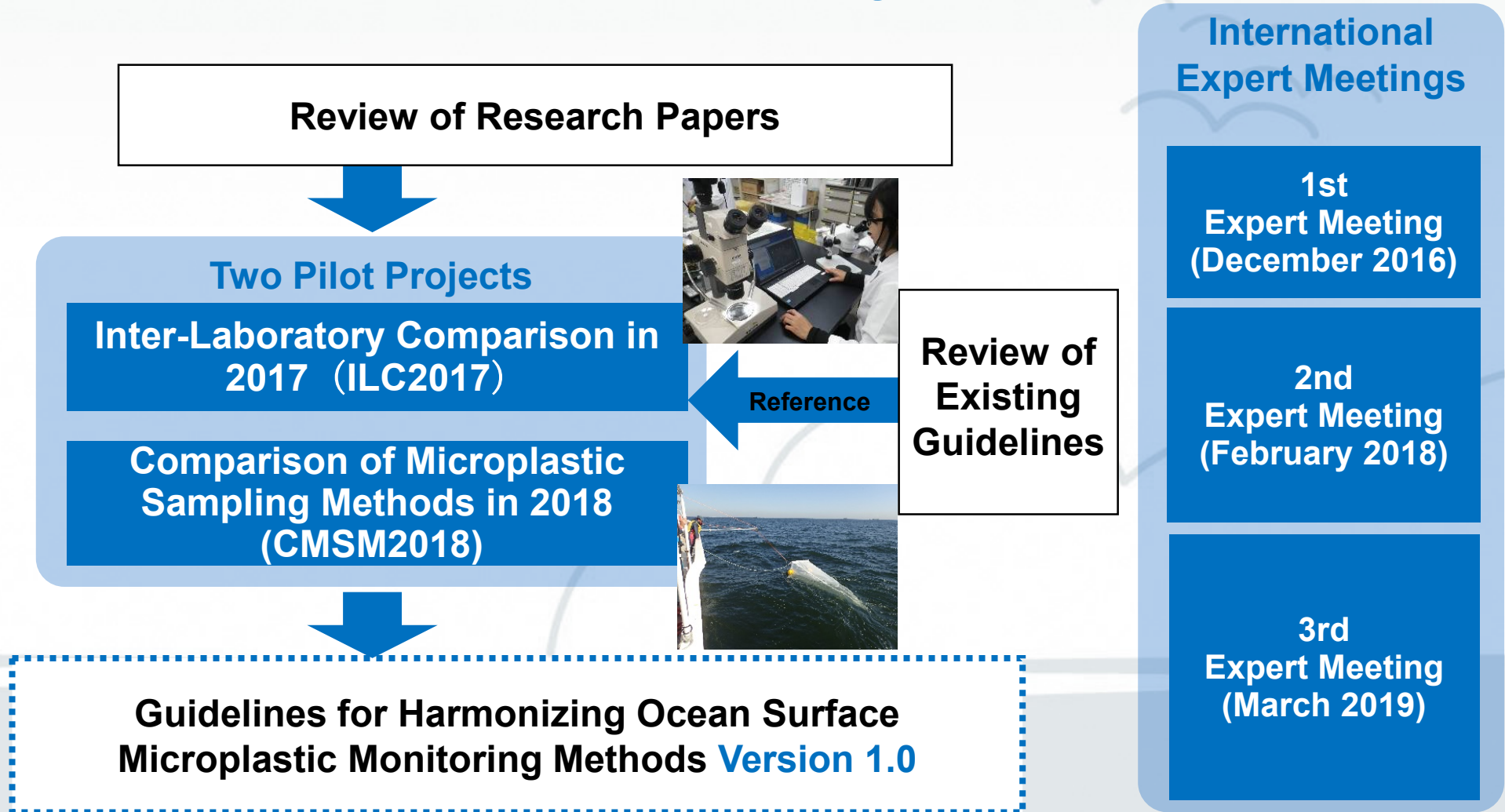


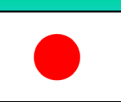
- **Harmonization** of monitoring methods
- Exploration **how to compare existing data**



## Process

To develop the Guidelines for harmonization, **two projects** were implemented and discussed at **International Expert Meetings**.





## Contents

Chapter	Contents
<b>1. Introduction</b>	Background, purpose, scope, etc.
<b>2. Sampling methods</b>	Sea conditions, sampling equipment, tow parameters, recorded metadata, implemented blank tests.
<b>3. Laboratory analysis</b>	Preprocessing, picking out of microplastics, counting and size measurement, material identification, weight measurement and accuracy control during analysis.
<b>4. Reporting</b>	Recommendations on methods of reporting microplastic collection results and metadata to be attached.
<b>5. Conclusions</b>	Summary, items that require further consideration, etc.

**Planning**



**Equipment**



**Sampling**



**Onboard sample processing**



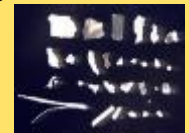
**Pretreatment**



**Picking out microplastics**



**Counting and size measurement**



**Identification of microplastics**



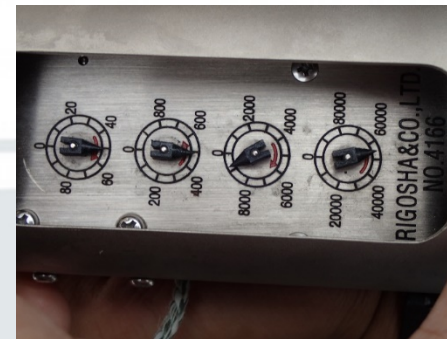
**Weight measurement**



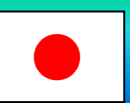
## Recommendations (results of CMSM2018 )

### It would be desirable

- to collect samples when **sea conditions are as calm as possible**
- **to use a flowmeter to calculate the tow distance** (if the tow distance is affected by a water surface current and not equivalent to that calculated between the start and end positions )
- **to compare results of particles in the size range of 1 – 5 mm**  
For plastic particles larger than 1 mm, there were no significant differences in the number collected with nets having different mesh opening sizes (0.35 mm and 0.1 mm).

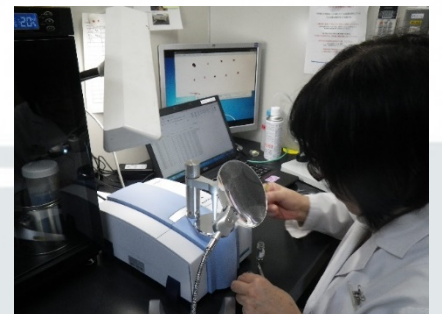


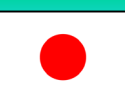




## Recommendations (results of ILC2017 )

- Reporting results (particle concentrations and weights) on **microplastic particles larger than 1 mm separately from those smaller than 1 mm to ensure comparability of results** is recommended .
- To obtain more accurate results, **digesting organic matter in a pretreatment process** is recommended.
- A scientific paper on the results of ILC2017 was published in *Marine Pollution Bulletin* (Isobe et al., vol.146, 2019, P.831-837), titled “An interlaboratory comparison experiment to quantify the abundance of microplastics in standard sample bottles .”

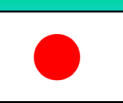




- **Twenty-two experts** participated as authors of the Guidelines. # listed in alphabetical order

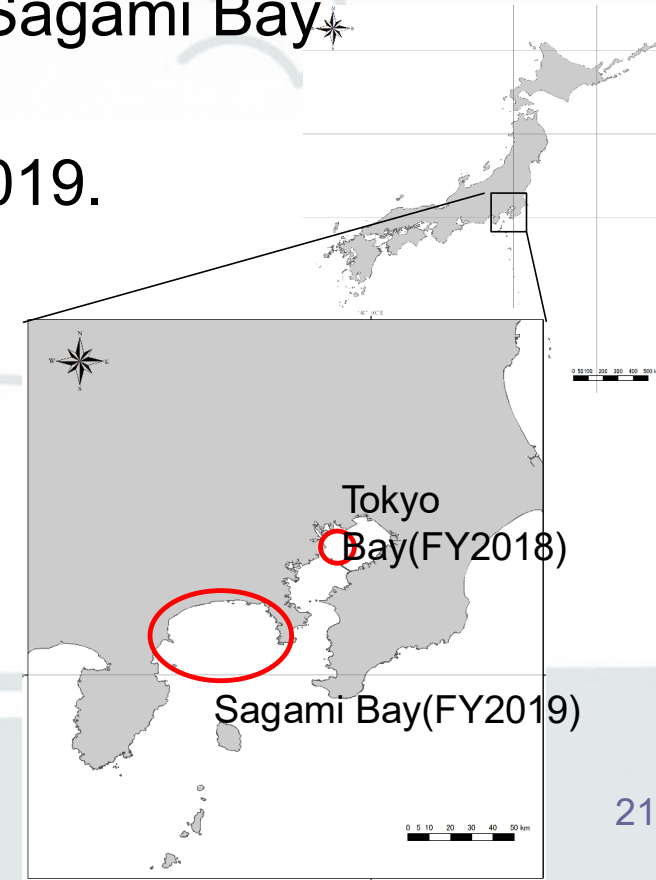
Author name	Country	Author name	Country
Michida, Y.	Japan	Mason, S.A.	USA
Chavanich, S.	Thailand	Mu, J.	P.R. China
Cózar Cabañas, A.	Spain	Saito, H.	Japan
Hagmann, P.	Switzerland	Shim, W.J.	R. Korea
Hinata, H.	Japan	Syakti, A.D.	Indonesia
Isobe, A.	Japan	Takada, H.	Japan
Kershaw, P.	UK	Thompson, R.	UK
Kozlovskii, N.	Russia	Tokai, T.	Japan
Li, D.	P.R. China	Uchida, K.	Japan
Lusher, A.L.	Norway	Vasilenko, K.	Canada
Martí, E.	Spain	Wang, J.	P.R. China

- The Guidelines were published on the MoEJ website and Ocean Best Practice website.
- Inputs to the Guidelines by GESAMP, UNEP, WESTPAC (IOC-UNESCO), SCOR and other institutions have progressed.

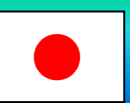


## Comparison of microplastic sampling methods

- Field surveys are continuing in 2019 to provide additional supporting data.
- Microplastic sampling is being conducted in Sagami Bay\* using a **small vessel (fishing boat)**.
- Sampling methods to be investigated in FY2019.
  - Different **mesh openings**
  - Different **types of sampling nets**
  - Different **sampling net positions relative to the vessel**
  - Different **tow directions relative to the wind**







## Actions to disseminate the Guidelines

- Application of the harmonized methods proposed in the Guidelines will facilitate generation of results in a comparable manner.
- We are preparing a form for reporting the items recommended by the Guidelines.
- This form will be distributed to relevant parties in the near future.
- It will allow data to be collected for **preparing distribution maps of microplastics**.
- We will appreciate your filling out the form and returning it to us. Your data will be published to enable open access.

The background features a light blue gradient. In the upper right, there is a cluster of stylized birds in flight, represented by simple curved lines. At the bottom, a dark blue horizontal band contains a white wavy line that resembles a horizon or a stylized cloud formation.

**Thank You for your attention.**

2019 NOWPAP-TEMM ICC Workshop

# Progress in addressing marine litter in the Republic of Korea

2019. 9. 24.

Juyoung, PARK





### ■ Status Quo of Marine Litter of ROK

**145,258 tons** of Marine Litter is generated every year in ROK

- **Land based ML: 94,814 tons (65%), Sea-based ML: 50,444 tons (35%)**
  - \* Inflow of fallen trees due to natural disasters: 62,080 tons (43%), Fishing gear: 38,105 tons (26%)
- **Amount of existing Marine Litter : 148,721 tons**
  - \* Shoreline 27,995 tons, sunken 114,977 tons, floating 5,749 tons



Floating Debris



Shoreline Debris

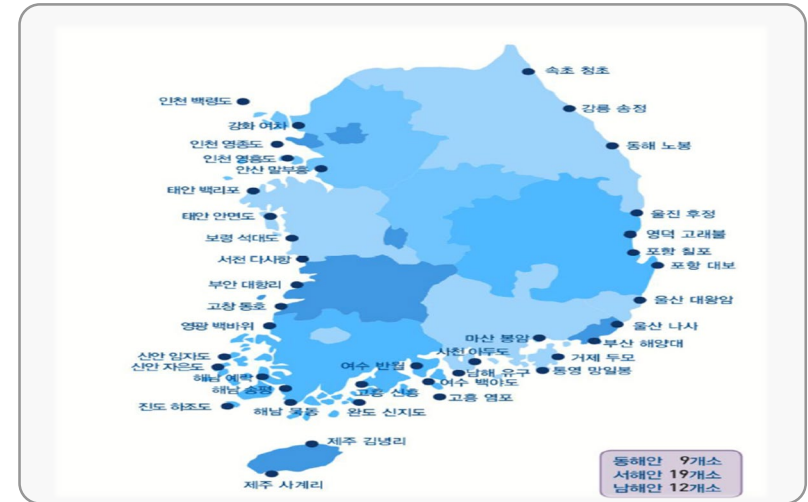


Sunken Debris

( \* Data from the 3rd National Marine Litter Management Plan / Ministry of Oceans and Fisheries of ROK )

## National Marine Litter Monitoring Program

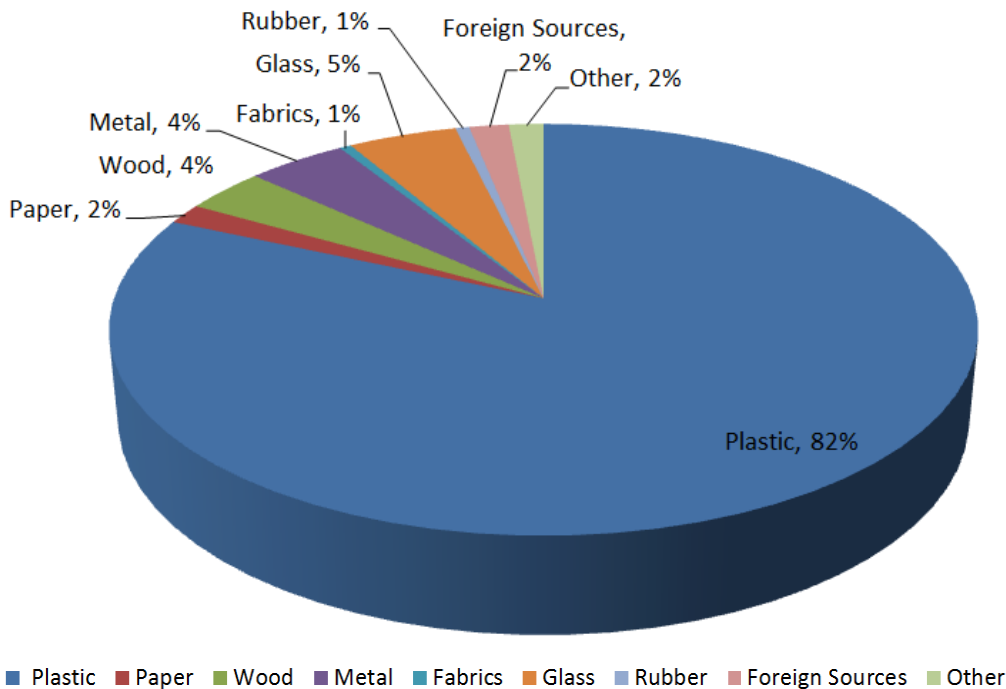
- Objectives
  - Collecting nation-wide ML data from 40 different spots.
- Implementation
  - KOEM with NGOs
  - Include foreign-origin ML study



## National Marine Litter Monitoring Result (2018)

On the basis of number, Plastic and Styrofoam accounts for 82% of marine litter, followed by Glass(5%) and Metal(4%), Wood(4%)

### < ML composition of the Yellow sea area >



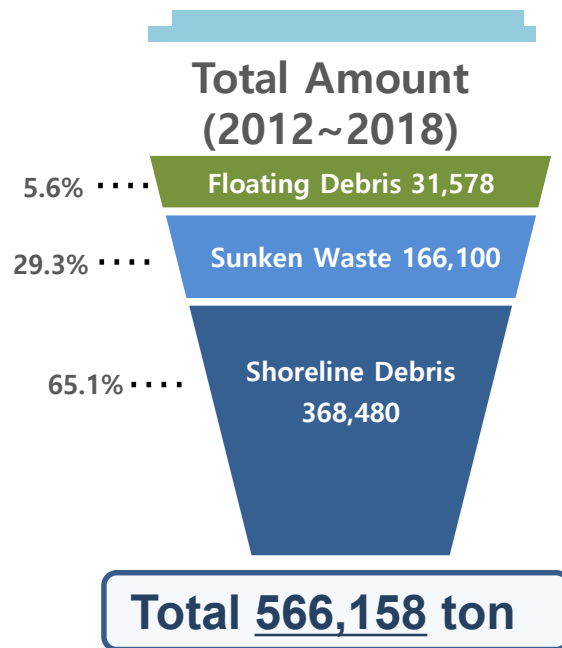
(\* Data from Marine Litter Information System / [www.malic.or.kr](http://www.malic.or.kr))



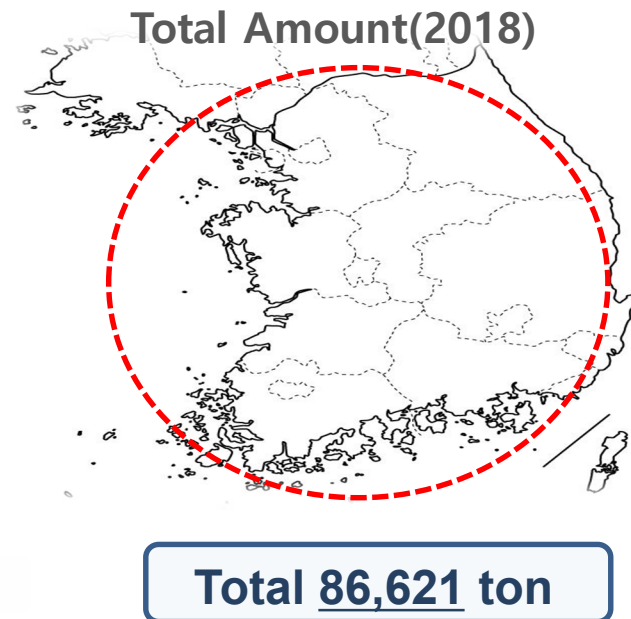
## Removal Performance of Marine Litter in ROK(2012 ~ 2018)

Amount of Removed marine litter every year: about **78,022 tons**;  
Overall Cost: APPX **US\$ 46 million** (including local governments)

- Type of ML: Shoreline litter 65.1%, Sunken waste 29.3%, Floating litter 5.6%



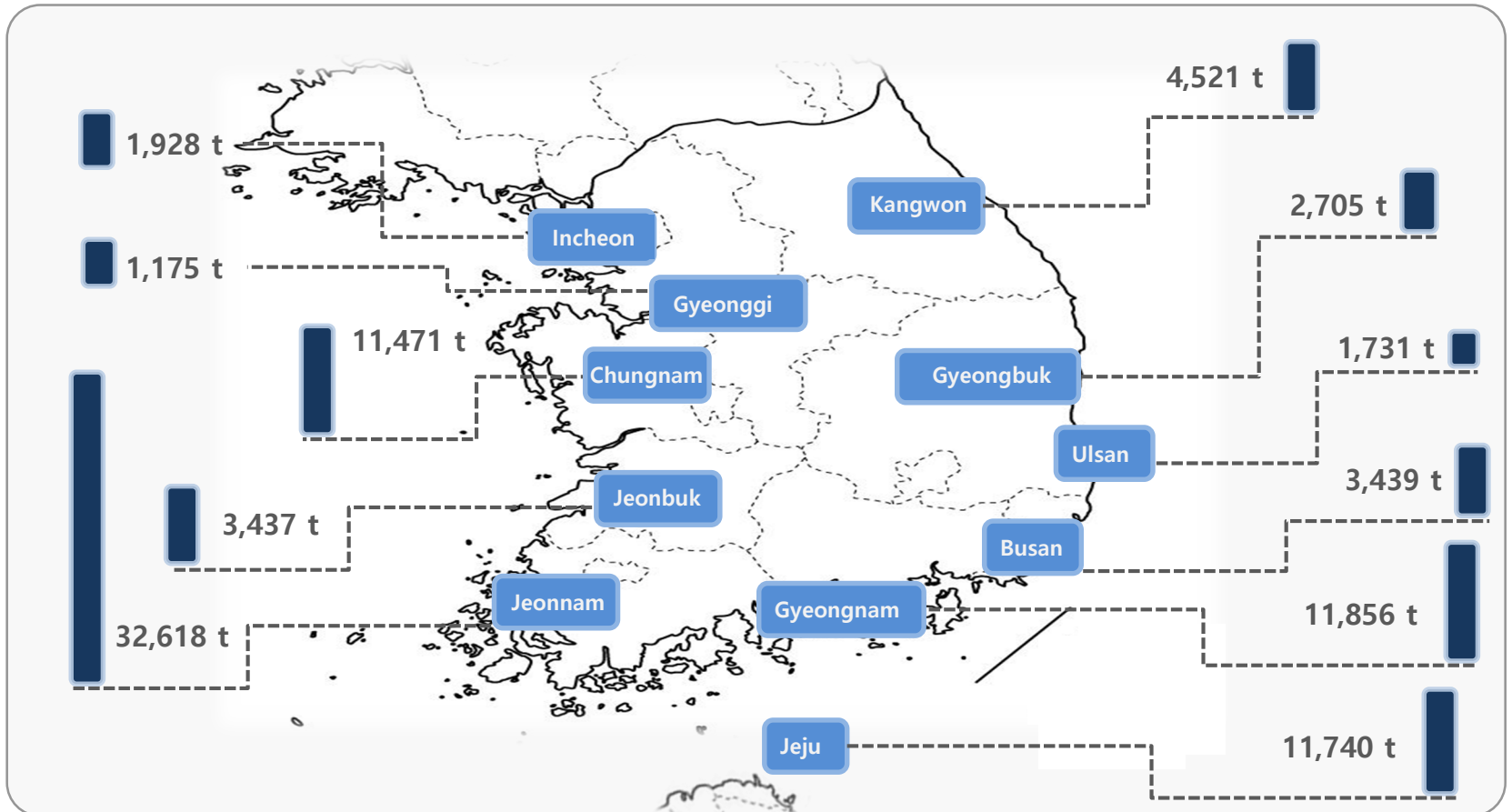
(Unit: Ton)



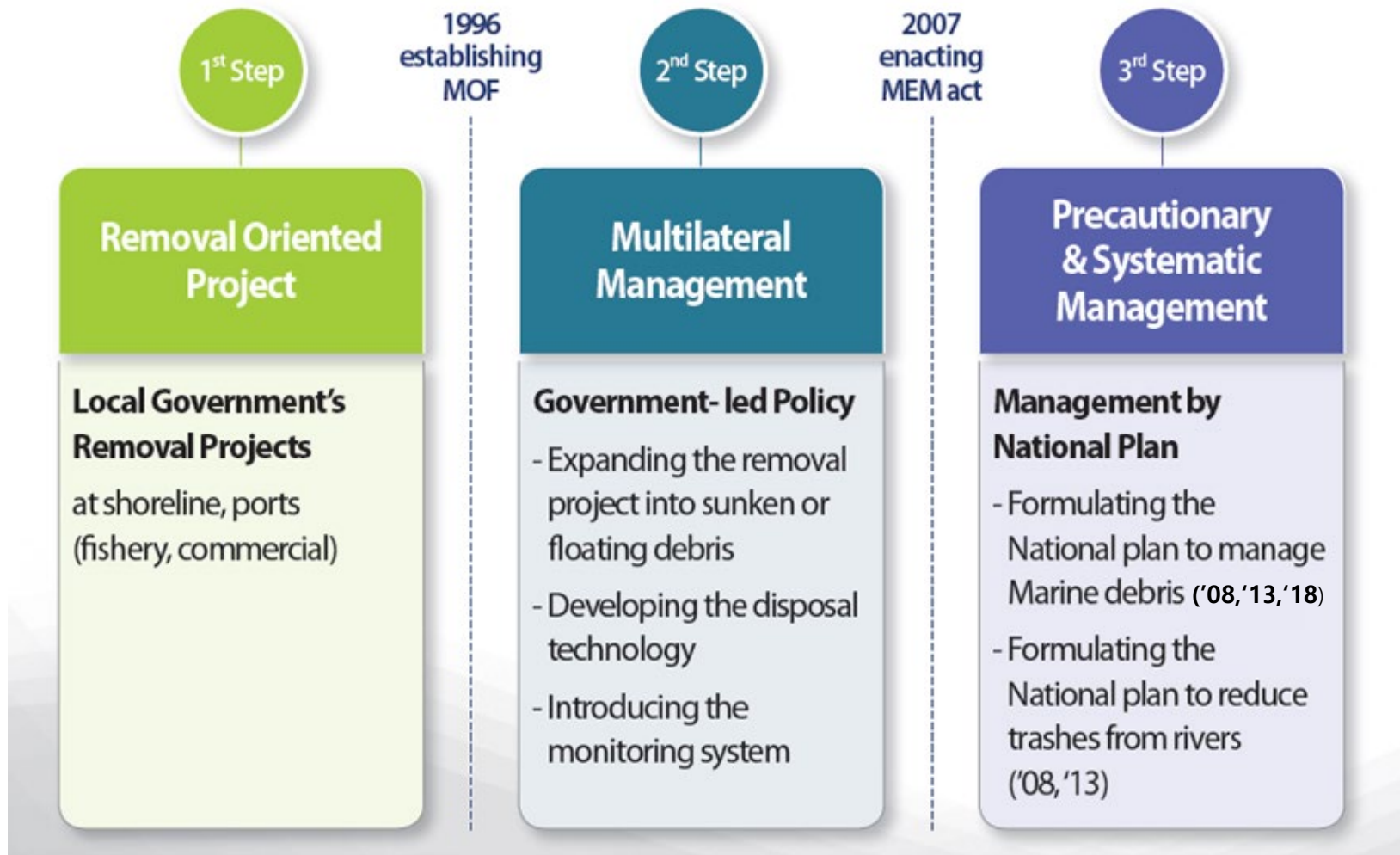
## Marine litter removal by local governments

**Total 86,621 tons** of marine litter was removed in ROK(2018)

(\* Data from [Marine Litter Information System / www.malic.or.kr](http://www.malic.or.kr))



## Marine Litter Management in ROK





## ■ Establishing Comprehensive Marine Litter Management Plan

### Legal Basis

- Policy measures established **every 5 years** according to the Marine Environment Management Act, Article '24'
- **Inter-ministerial policy collaboration** between MOF-MOE-KCG

### Progress and Budget

- **1st PLAN (2009-2013)** Appx. US\$ 240 million
- **2nd PLAN (2014-2018)** Appx. US\$ 330 million
- **3rd PLAN (2019-2023)** Appx. US\$ 883 million

## ■ Review of 1<sup>st</sup> National Marine Litter Management Plan (2009-2013)



Set-up and operation of ML collecting barges, Establishing fishing gear management system, Promotion of eco-friendly fishing gear use, Promotion of fishing boat waste/Bilge removal et al.

**Minimizing litter inflowing into marine environment**

Supporting NGOs' Marine Environment Conservation activities, Development of Marine Environment Education Programmes, Public outreach on Marine Litter, National Marine Litter Monitoring Programme, Regional and global cooperative projects



**Involving public and international collaboration**

**Increasing ML collection and disposal capacity**

**28 Tasks**  
US\$ 240million

**Enhancing ML management capacity**

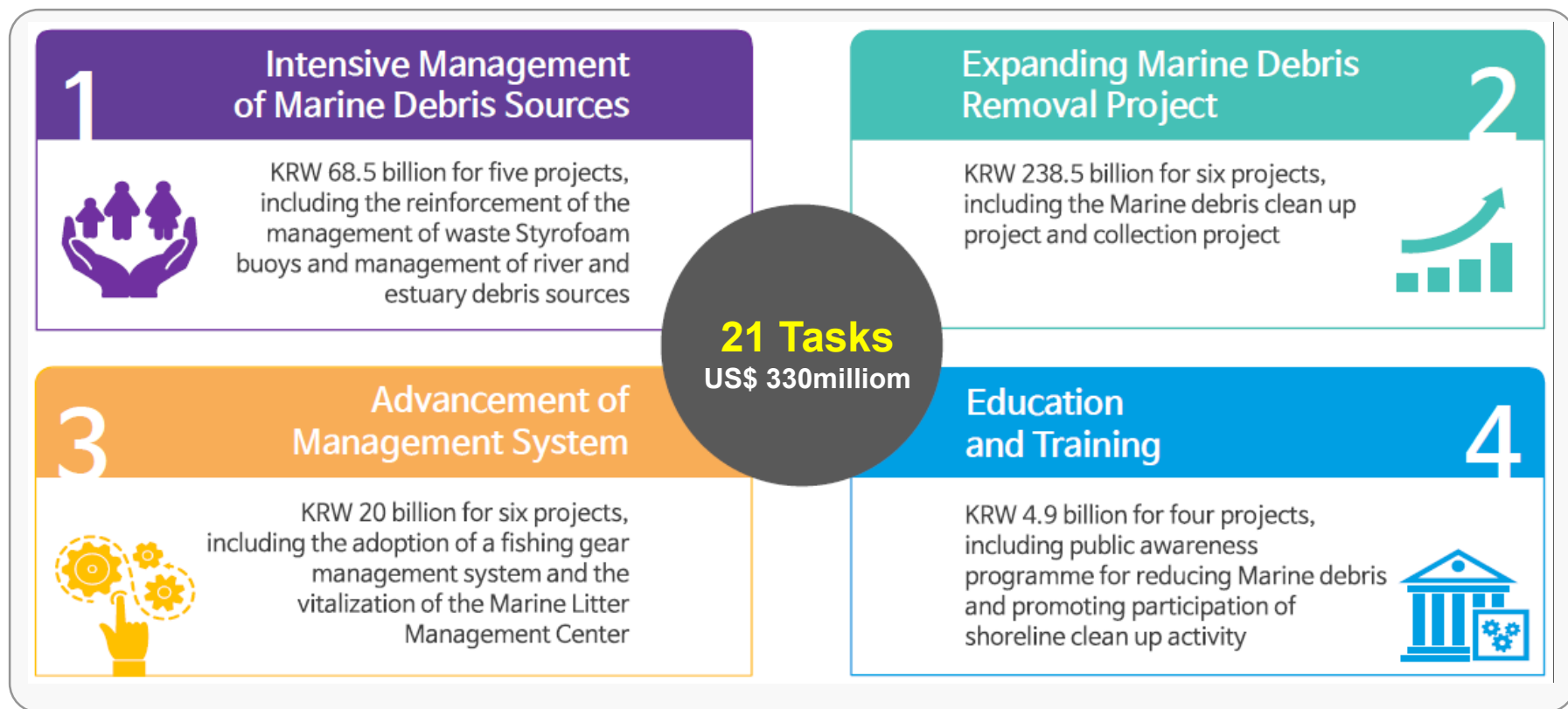


Fishing port deposited waste removal, Buying of the recovered waste during fishing, Deposited fishing gear removal, Distribution of Styrofoam volume reducer, River and estuarine waste clean-up et al.

Development of ML Statistics and Analysis Methods, Conducting the ML Distribution Survey, Establishment of ML Information System, Establishment of Marine Litter Management Center



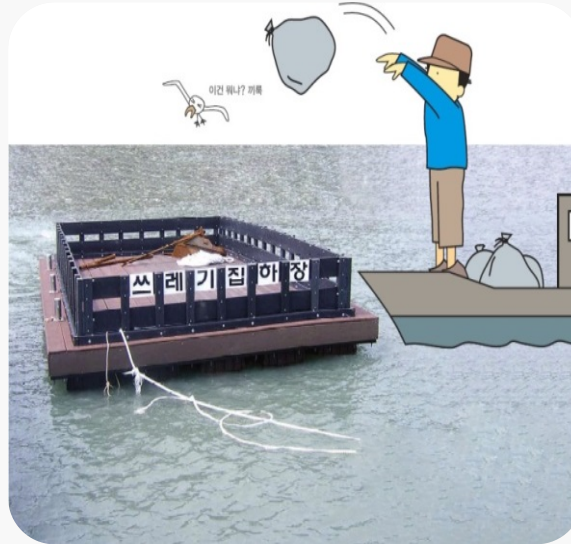
### ■ Review of 2<sup>nd</sup> National Marine Litter Management Plan (2014-2018)



## Case 1: Set-up and operation of ML barges

- **Objectives**

Place a barge-type marine collection site at ports or fishing ports to remove litter during fishing activities. It helps prevent the occurrence of abandoned, derelict and discarded fishing gear.



Cost of Disposal  
and Installation

**1 Barge:**

**Appx US\$ 31,025**



## Case 2:

### Compensation for the collected waste during fishing

- **Objectives**

- To prevent re-entering of the recovered waste during fishing into marine environment by buying the recovered waste
- This is ultimately cost-effective
- Enhancing fishers' awareness on marine environment



- **Cost sharing: Central 50%, Local 50%**

- Appx **US\$ 10M** invested between 2015~2018 (Avg US\$ 2M every year from the central gov)
- Collected 26,266 ton of ML between 2015~2018 (6,868 ton of marine litter in 2018)

## Case 3:

# Public campaigns to raise public awareness on Marine litter

- Objectives
  - To let all age groups to know the detrimental effect of marine litter
  - Including various programs such as Lectures, Mobile Classroom



## Case 4:

# Establishment of MALI Center and Marine Litter Information System

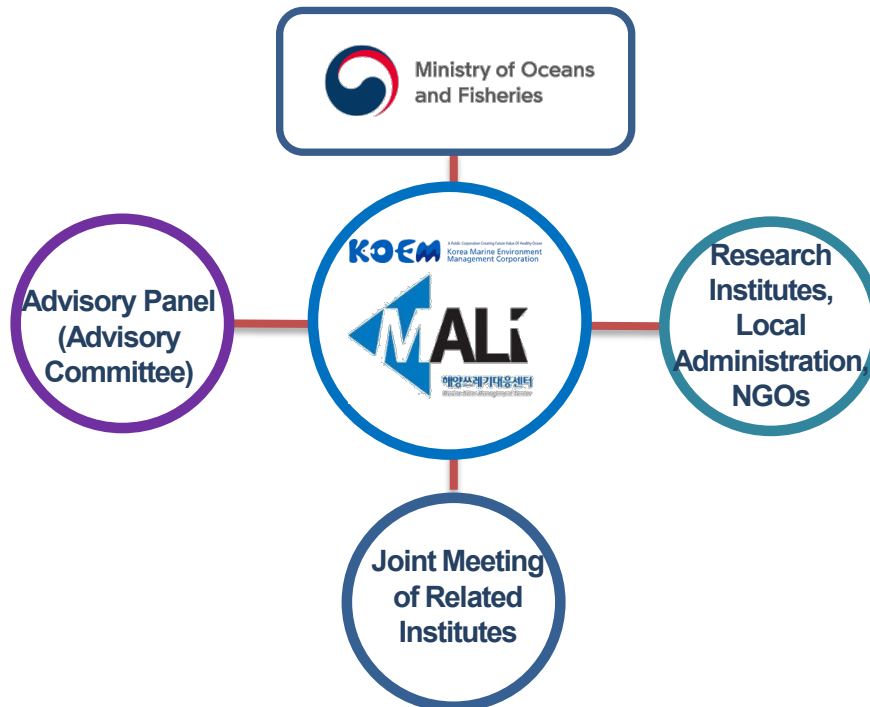


- MALI Center established in 2011
- Marine Litter Information System is to provide various information to public which was established in 2011 within MALI Center in KOEM

Monitoring



Policy support



Info. management

구분	단위	2011년	2012년
총량	톤	1,000,000	1,000,000
처리량	톤	900,000	900,000
처리율	%	90%	90%

구분	단위	2011년	2012년
총량	톤	1,000,000	1,000,000
처리량	톤	900,000	900,000
처리율	%	90%	90%

구분	단위	2011년	2012년
총량	톤	1,000,000	1,000,000
처리량	톤	900,000	900,000
처리율	%	90%	90%



International Collabor.



## ■ Scope of 3<sup>rd</sup> National Marine Litter Management Plan (2019-2023)

### Vision and Goal

#### Objective

» Create clean and safe oceans free of Waste

#### Goal

» Strengthen the management of marine debris at each stage

» Switch to a scientific and prevention-oriented management plan

### Strategy

Intensive management of Marine Litter Sources

Building of Marine Litter Collection Systems

Expansion of Marine Litter Disposal and Recycling

Strengthen Marine Litter Management Capacity and Public Awareness

### Implementation Tasks

1. Enhance management of sea-based sources
2. Enhance management of land-based sources
3. Enhance management of foreign-based sources

1. Reduce blind Spots in management
2. Specialize waste collection programs by sea areas
3. Efficientate the Collection System

1. Expand collection platforms
2. Invigorate recycling infrastructure

1. Strengthen the foundation of domestic management
2. Establish microplastic management infrastructure
3. Launch public campaigns participated by citizens
4. Strengthen customized education per subject
5. Strengthen response to international affairs and cooperation



## ■ Close-up view of Implementation Strategy

	1.Intensive management of Marine Litter Sources	2.Building of Marine Litter Collection Systems
Implementation Tasks	<ol style="list-style-type: none"> <li>1. Enhance management of sea-based sources</li> <li>2. Enhance management of land-based sources</li> <li>3. Enhance management of foreign-based sources</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce blind Spots in management</li> <li>2. Specialize waste collection programs by sea areas</li> <li>3. Efficienate the Collection System</li> </ol>
Specific Tasks	<ol style="list-style-type: none"> <li>1. Compensation for returned fishing gears, and buoys</li> <li>2. Enhanced management of fishing gears</li> <li>3. Enhanced management of styrofoam buoys</li> <li>4. Reinforced guidance and crackdown on ship-originated waste</li> <li>5. Reduce inflow of land-based waste into oceans through marine litter barriers</li> <li>6. Total waste Load Management on rivers and estuaries</li> <li>7. Improve management and response of foreign-based waste through joint research</li> </ol>	<ol style="list-style-type: none"> <li>1. Strengthen waste management on islands</li> <li>2. Strengthen collection at vulnerable sea areas</li> <li>3. Expand existing collection projects(fishing grounds)</li> <li>4. Expand existing collection projects( areas other than fishing grounds)</li> <li>5. Establish collection and transport system for derelict fishing gear at a regional level</li> <li>6. Create a collection environment that encourages local participation</li> <li>7. Make an efficient collection system</li> </ol>

## ■ Close-up view of Implementation Strategy

	3.Expansion of Marine Litter Disposal and Recycling	4.Strengthen Marine Litter Management Capacity and Public Awareness
Implementation Tasks	<ol style="list-style-type: none"> <li>1. Expand collection platforms</li> <li>2. Invigorate recycling infrastructure</li> </ol>	<ol style="list-style-type: none"> <li>1. Strengthen the foundation of domestic management</li> <li>2. Establish microplastic management infrastructure</li> <li>3. Launch public campaigns participated by citizens</li> <li>4. Strengthen customized education per subject</li> <li>5. Strengthen response to international affairs and cooperation</li> </ol>
Specific Tasks	<ol style="list-style-type: none"> <li>1. Distribute pre-processing facilities of marine litter</li> <li>2. Strengthen management of private disposal companies</li> <li>3. Install collection facilities of marine debris</li> <li>4. Increase the application of Extended Producer Responsibility(EPR)</li> <li>5. Expand the demand of recycled products</li> <li>6. Develop technology for recycling and resource recovery</li> <li>7. Project for creating a pilot village for turning marine debris into energy</li> </ol>	<ol style="list-style-type: none"> <li>1. Strengthen a foundation for marine litter management through legislation</li> <li>2. Build the foundation for the management of ocean microplastic</li> <li>3. Increase public participation</li> <li>4. Boost public relations</li> <li>5. Invigorate customized education per subject</li> <li>6. Strengthen response to international affairs and cooperation</li> </ol>

## Close-up view of Specific Tasks

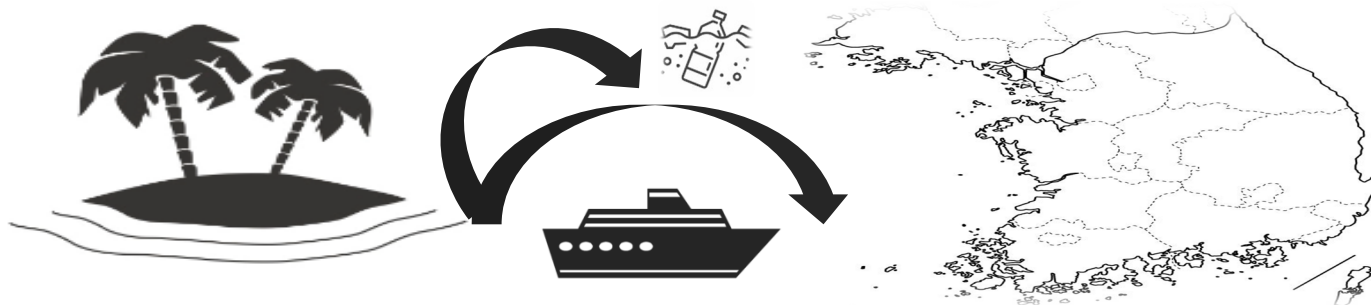
### Specific Task 2-1 : Strengthening waste management in Islands

#### Objectives

Build and operate a garbage collection and disposal system on islands to preserve its environment and improve settlement conditions

#### Main Contents

- To Establish collection platforms on islands in order to collect island waste, which is highly likely to reenter the oceans,
- To build a management system including the deployment of marine litter clean-up vessels and vehicles based on results from waste management research on island regions



## ■ Close-up view of Specific Tasks

### ■ Specific Task 2-2 : Strengthening collection at blind spots of sea areas

#### • Objectives

Protect the marine ecosystem and Fisheries resources by collecting marine litter deposited in vulnerable sea areas such as in the EEZ and border areas, generated as a result of fishing activities and the movement of ocean currents

#### • Main Contents

- To collect marine litter deposited in the EEZ
- To collect waste in Korea-Japan, Korea-China intermediate Waters
- A clean-up project for marine litter deposited in the Maritime Peace Zone of the Yellow sea
- Strengthening management of marine litter at ports managed by local governments



## Close-up view of Specific Tasks

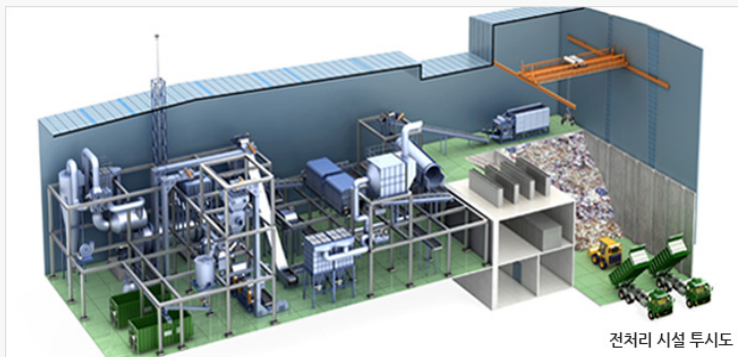
### Specific Task 3-1 : Distribute resource recovery facilities of marine litter

- **Objectives**

Provide support for the installment of waste Styrofoam compressors and pre-processing facilities in order to invigorate resource recovery of marine debris

- **Main Contents**

- To install pre-processing facilities for resource recovery
- To distribute compressors for waste buoys



## Close-up view of Specific Tasks

### Specific Task 3-7 : creating a pilot village for turning marine litter into energy

- **Objectives**

Develop a resource circulation model for effective disposal of marine litter and demonstrate the effectiveness by creating a pilot village

- **Main Contents**

- Create a pilot village in which marine litter turns into energy
  - Recycle marine litter generated in fishing communities and switch them into a source of energy



## Close-up view of Specific Tasks

### Specific Task 4-2 : Build the foundation for microplastic management

- **Objectives**

Investigate distribution and evaluate potential risks associated with microplastics to strengthen the response as it has gained huge attention and concern both home and abroad

- **Main Contents**

- To convey Regular investigation on microplastic distribution
- Risk assessment of microplastic at a pan-governmental level and come up with risk standards for human health
- To Study environmental risk of microplastic



## ■ Master Plan on Marine Plastic Litter (2019)

### Vision and Goal

#### Objective

➤ Create clean and safe oceans free of Waste

#### Goal

➤ Reduce 50% of Marine Plastic Litter By 2030

### Action

Prevention of Marine Plastic Litter generation

1. Enhance management of sea-based sources
2. Enhance management of land-based sources
3. Enhance management of foreign-based sources

Expansion of Marine Plastic Litter Collection and transporting Systems

1. Reduce blind Spots in management
2. Improve waste collection programs by sea areas
3. Increase public and local participation

Expansion of Marine Plastic Litter Disposal and Recycling

1. Expand collection platforms
2. Invigorate recycling

Strengthen Management Capacity and Public relations

1. Enact Marine Waste Management Act
2. Strengthen research and monitoring on Micro plastics
3. Strengthen customized education per subject
4. Boost public relations



## ■ Processing New Law ‘Marine Waste Management Act’ (TBC)

- ✓ Reinforce the accountability of polluters, expand recycling of marine waste, and ensure marine litter is handled in eco-friendly way
- ✓ Enact legislation to prevent the inflow of marine litter into the ocean, conduct an investigation on the current state of the marine litter issue, etc.



**THANK YOU**  
FOR YOUR ATTENTION



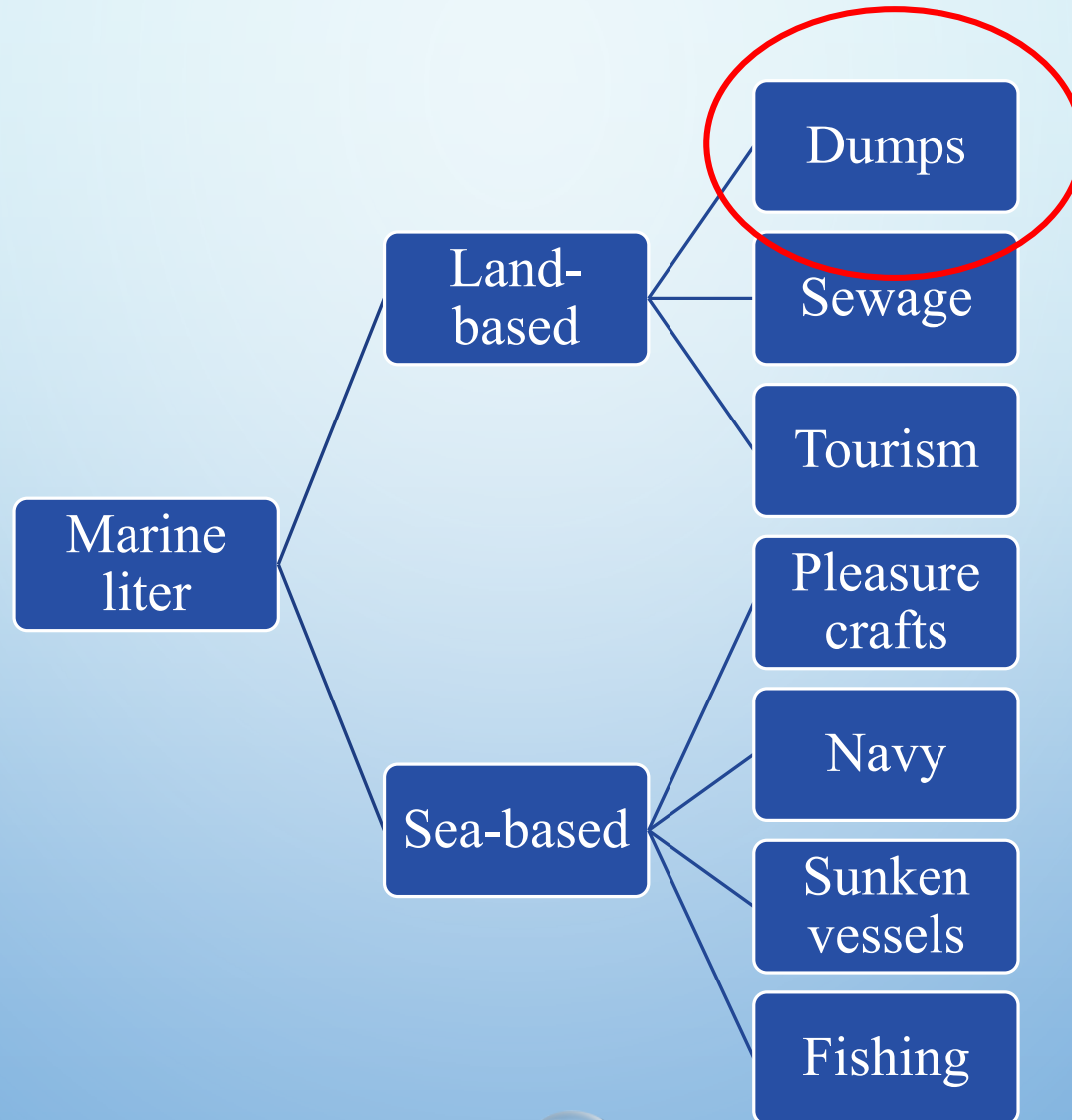
# PROGRESS IN ADDRESSING MARINE LITTER IN THE RUSSIAN FAR EAST

Daria Zadoya

PhD

Associate Professor at the Department of  
Safety in the Oil and Gas Industry

# MARINE LITTER SOURCES





# JUST SEVERAL YEARS AGO...





# NOW IT LOOKS LIKE THIS



## BUT IT IS NOT VERY SHINY ANYWAY

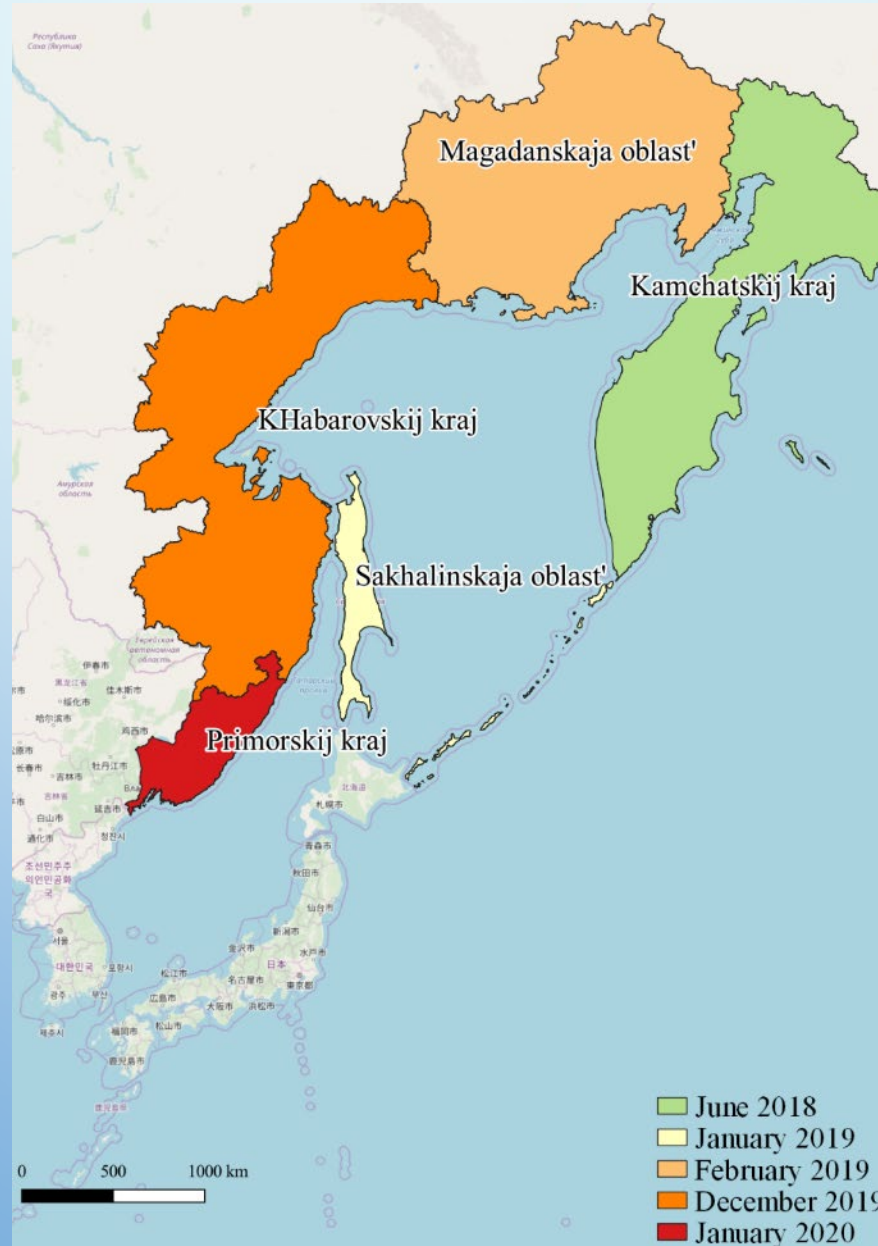
- THE POLYGON IS DESTROYING BECAUSE OF DIFFERENT UNPLEASANT PROCESSES WITH THE GARBAGE INSIDE
- THE CAPACITY OF THE POLYGON IS LIMITED AND WILL BE OVER IN A FEW YEARS
- SEPARATE WASTE COLLECTION SYSTEM DOES NOT WORK PROPERLY
- IMPLEMENTATION OF THE WASTE MANAGEMENT SYSTEM REFORM WAS DELAYED

# SOME KEY POINTS OF THE WASTE MANAGEMENT SYSTEM REFORMATION

- ALL THE WASTE MANAGEMENT SYSTEM FROM THE DUMPSTER TO RECYCLE IS NOW IN RESPONSIBILITY OF THE ONE ORGANIZATION (REGIONAL OPERATOR)
- AREA OF RESPONSIBILITY OF THE REGIONAL OPERATOR IS WHOLE THE SUBJECT OF RF (PRIMORSKY KRAI, KHABAROVSKY KRAI etc.).
- OPERATOR CAN CONCLUDE TREATIES WITH OTHER ORGANIZATION
- WASTE REMOVAL TAX IS SEPARATE FROM OTHER COMMUNAL PAYMENT AND BECOMES HIGHER
- IT IS PLANNED THAT THE PERCENT OF WASTES UTILIZATION AND RECYCLE IS INCREASE UP TO 60%



# IMPLEMENTATION OF THE WASTE MANAGEMENT REFORM IN THE RUSSIAN NOWPAP REGION



# WHERE WE ARE NOW

- THE REGIONAL OPERATOR HAS BEEN APPOINTED. IT CALLS 'ECOLOGICAL OPERATOR' AND BEGINS ITS ACTIVITY IN FULL ON THE 1.01.2020. NOW THEY ARE DOING ALL THE GROUNDWORK
- THERE ARE 13 APPROVED WASTE POLYGONS IN THE PRIMORSKY KRAI
- THERE ARE 8 WASTE POLYGONS THAT ARE WAITING FOR APPROVING
- TEMPORARY WASTE STORAGES ARE BEING DEVELOPED IN 8 DISTRICTS
- ECOLOGICAL OPERATOR GETS FINANCING FROM PRIMORSKY KRAI'S LOCAL BUDGET AND IT IS ABOUT \$3500000



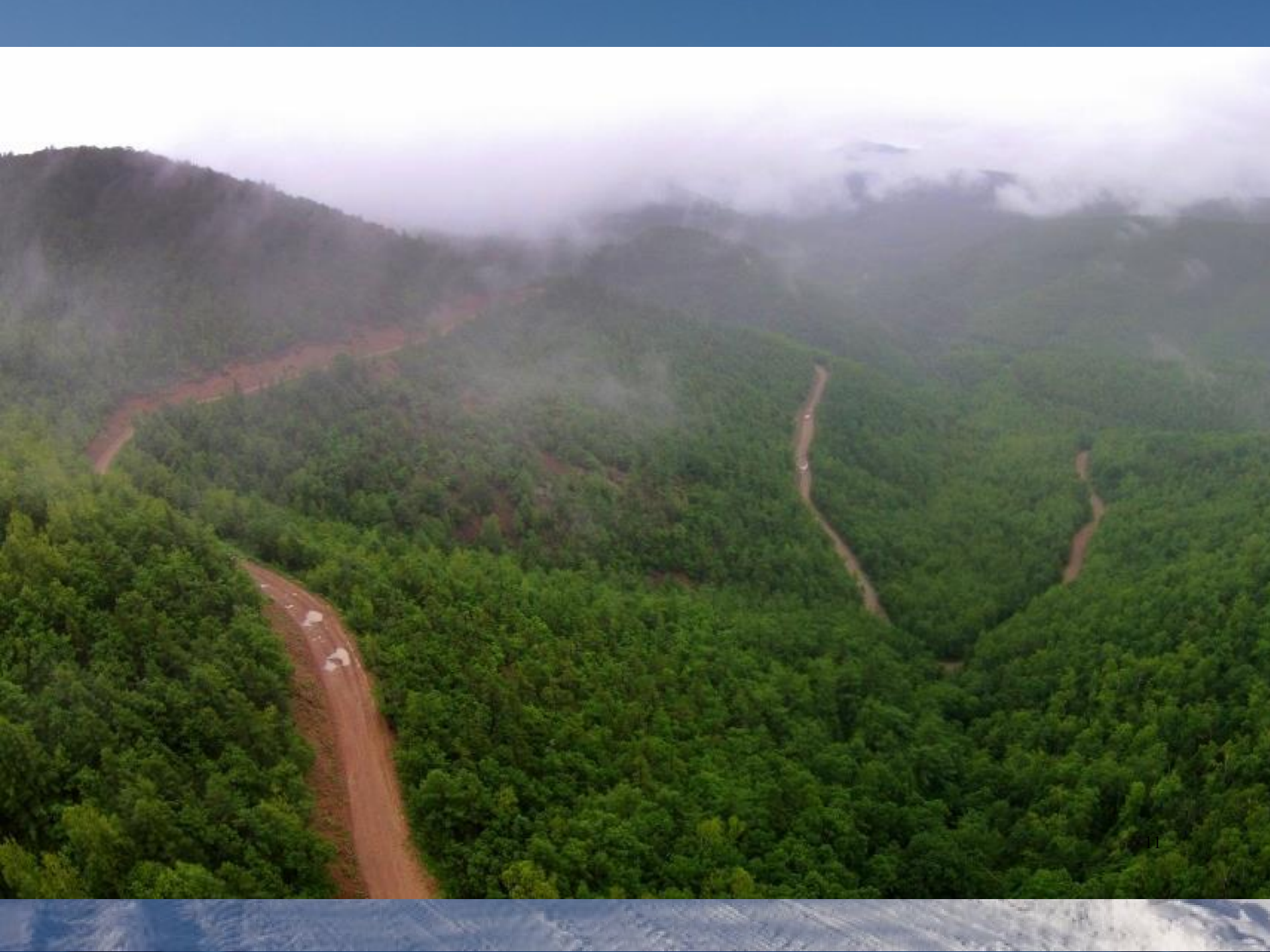
# THE MAIN DIFFICULTIES WE FACED WITH



THE AREAS ARE WIDE, THE ROADS ARE...







# WASTE STANDARDS CURRENTLY IN FORCE NEED REVISION

- ACCORDING THE WASTE STANDARDS CURRENTLY IN FORCE, EACH PERSON LIVING IN APARTMENT HOUSE PRODUCES ABOUT 170kg OF WASTES EVERY YEAR
- AND EACH PERSON IN THE PRIVATE HOUSE PRODUCES ABOUT 320kg
- THE REAL NUMBERS ARE OPPOSITE
- WASTE REMOVAL TAX DEPENDS ON THIS NUMBERS
- IT TAKES A YEAR TO FIGURE OUT NEW STANDARDS. THE WORK BEGINS THIS OCTOBER



# WE HAVE A LACK OF WASTE RECYCLE COMPANIES

✓ PAPER

✓ CANS

✓ PLASTIC

(20% of all

the wastes)

✓ TIRES

x GLASS





# ALL THE SORTING IS DOING HERE





# THIS IS THE POLYGON WITH NEW FACILITIES





- AT FIRST THERE WAS NO SORTING AT ALL
- THEN SORTING LINE WAS BUILT AND IT WAS WORKING FOR SOME TIME
- BUT SEVERAL YEARS AGO SORTING LINE WAS BROKEN AND WAS NOT FIXED (NOBODY KNOWS WHY)
- LAST YEAR THE OWNER COMPANY WAS REORGANIZED AND THE NEW TEAM REPAIRED EQUIPMENT AND GAVE THE NEW LIFE TO THE WASTE SORTING PROCESS










# SOME NUMBERS

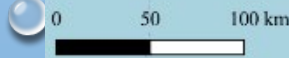
- 800tons OF WASTES ARE DELIVERED HERE EVERY DAY
- 200tons OF THEM ARE SORTING
- NEW SORTING LINE IS UNDER CONSTRUCTION
- WHEN IT IS BEGIN TO WORK THE AMOUNT OF RECYCLING WASTES WILL RISE UP TO 700tons A DAY
- 11% OF THIS AMOUNT IS RECYCLABLE MATERIALS (IT IS PLANNED TO INCREASE UP TO 36%)
- THE AREA OF THE POLYGON AND SORTING FACILITIES IS ABOUT 50ha



# WASTE MANAGEMENT TERRITORIAL SCHEME



-  Existing Polygons
  -  Reload Stations (2020)
  -  Legal Dumps 18
  -  Temporary Grounds with Press
  -  Mobile Sorting Stations (2019)
- OSM Standard





# WHAT ELSE, EXCEPT THE POLYGON AND SORTING

- 6 BIG ILLEGAL DUMPS WERE ELIMINATED THIS YEAR
- IN THE DIFFERENT PARTS OF KRAI WAS ELIMINATED A LOT OF SMALL DUMPS
- PRIMORSKY KRAI ADMINISTRATION HELD THE ACTIONS:
  - COLLECTING OF PLASTIC AND PAPER WASTES (OVER 40 SCHOOL TOOK PART AND OVER 55 tons OF PAPER, 1 ton OF PLASTIC AND 0.5 tons OF BATTERIES)
  - 6 ACTIONS OF COASTAL CLEANUP (257 PEOPLES TOOK PART, ABOUT 3 tons OF WASTES WERE COLLECTED)
- SEVERAL ACTIONS IN COOPERATION WITH ECOLOGICAL COMPANIES WERE HELD. THESE ACTIONS ARE TARGETED TO THE REUSE AND RECYCLE IDEA POPULARIZATION

# EVEN OUR MINISTER OF ECOLOGY IS IN THE TEAM





THANK YOU FOR YOUR ATTENTION!



Dalian, September 2019

21





# **Improve waste management to address marine litter in China**

**Qingjia MENG**

**Chinese Research Academy of Environmental Sciences**

**NOWPAP-TEMM ICC, September 24, 2019  
Dalian, China**

# Outline

**1**

**Overview of current status**

**2**

**Waste management in China**

**3**

**National Action Plan**

**4**

**Zero-waste City Pilot Program**

1

## Overview of current status

industrial  
solid waste

**domestic  
waste**

hazardous  
waste



### Data release in 2018

- A total of 202 large and medium-sized cities released information on environmental pollution prevention and control of solid waste in 2017
- The total amount of **industrial solid** waste generated was about **1.3 billion** tons
- The amount of **industrial hazardous** waste generated was about **40 million** tons
- The amount of **medical waste** generated was about **800,000** tons.
- The amount of **domestic waste** produced was about **200 million** tons.

### Data release in 2018

- By the end of 2018, the national urban domestic waste disposal capacity was more than **700,000 tons/day**, and the harmless treatment rate was about **98%**;
- Eight provinces including Beijing, Tianjin, Shanghai, Jiangsu, Shandong, Guangxi, Hainan and Sichuan passed acceptance the rural domestic waste treatment, and among 100 towns and villages in the classification and utilization of rural household waste, **75%** of towns and **58%** of villages started the waste sorting;
- **47%** of the 24,000 informal dumps have completed remediation.

**Laws and regulations**

**Standards and specifications**

**State Council documents and policies**

**Measures, action plans, etc.**



## 2.1 Laws and regulations

Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes (2016 Revision). Date of implementation: November 7, 2016

Law of the People's Republic of China on Circular Economy Promotion (Revised Edition, 2018). Date of implementation: October 26, 2018

Law of the People's Republic of China on Cleaner Production Promotion (2012 Revision). Date of implementation: July 1, 2012

Measures for the Administration of Imports of Solid Waste. Date of implementation: August 1, 2011

## 2.1 Laws and regulations

Regulations on the Management of Recycling of Waste Electrical and Electronic Products. Date of implementation: January 1, 2011

Medical Waste Management Regulations (2011 Revision). Date of implementation: January 8, 2011

Measures for the Supervision and Administration of Inspection and Quarantine of Solid Wastes Imported as Raw Materials (Revised 2018). Date of implementation: July 1, 2018

Measures for the Administration of Hazardous Waste Management Licenses (2016 Revision). Date of implementation: February 6, 2016

## 2.2 Standards and specifications

General Rules for the Identification of Solid Wastes (GB 34330-2017).  
Date of implementation: October 1, 2017

Technical Guidelines for Solid Waste Treatment and Disposal Engineering (HJ 2035-2013). Implementation date: December 1, 2013

Standards for Pollution Control of Domestic Waste Incineration (GB 18485-2014). Date of implementation: July 1, 2014

Standards for Pollution Control of Domestic Waste Landfills (GB 16889-2008). Date of implementation: July 1, 2008

## 2.2 Standards and specifications

Technical Specification for Waste Plastics Recycling (GB/T 37821-2019).  
Date of implementation: December 1, 2019

Technical Specification for Waste Plastics Recycling and Sorting (SB/T 1149-2015). Implementation date: September 1, 2016

Ship Pollutant Emission Standard (GB 3552-2018). Date of implementation: July 1, 2018



## 2.3 State Council documents and policies

### Plastic limit order

On December 31, 2007, the General Office of the State Council issued the Notice on Restricting the Production, Sale and Use of Plastic Shopping Bags (Guo Ban Fa [2007] No. 72)

From June 1st, 2008, it is forbidden to produce, sell and use plastic shopping bags with thickness less than **0.025mm**. It is forbidden to provide plastic shopping bags for free in all supermarkets, shopping malls, bazaars and other retail places. .

The purpose is to limit and reduce the use of plastic bags to prevent "white pollution."

## 2.3 State Council documents and policies

### "Twelfth Five-Year Plan"

On April 19, 2012, the General Office of the State Council issued the "12th Five-Year Plan for the Construction of Harmless Treatment Facilities for Urban Domestic Wastes" (Guo Ban Fa [2012] No. 23)

Guide local governments to accelerate the construction of harmless treatment facilities for **domestic waste**

Improve the ability of harmless treatment of **urban domestic waste**

Improve the living environment.

## 2.3 State Council documents and policies

### Zero-waste City Pilot Program

On January 21, 2019, the General Office of the State Council issued Work Plan on “Zero-waste City” Pilot Program in China(Guo Ban Fa [2018] No. 128)

coordinate the solid waste management with social and economic development

vigorously promote the reduction, recycling and the environmentally sound disposal

resolutely curb illegal transfer and dumping of solid waste

establish a quantitative indicator system

systematically summarize the experience from the pilot cities and refine replicable and applicable models.

## 2.4 Measures, action plans, etc.

Soil Pollution Prevention Action Plan

The relevant “Twelfth Five-Year Plan” about waste management

Domestic waste classification system



## Soil Pollution Prevention Action Plan

On May 31, 2016, the State Council issued (Guo Fa [2016] No. 31)

Scientific layout of domestic garbage disposal, hazardous waste disposal, recycling of waste resources and other facilities and places. Reduce living pollution.

Establish a coordination mechanism for government, community, enterprises and residents, and promote waste collection, resource reduction and harmlessness.

Establish a village cleaning system, promote the management of rural domestic waste.

Remediation of informal landfills.

We will implement the policy of “promoting the disease with awards” and expand the scope of rural environmental contiguous rectification.

## The relevant “Twelfth Five-Year Plan”

“Twelfth Five-Year Plan  
for Waste Recycling  
Science and  
Technology Project”

“Twelfth Five-Year Plan  
for Chemical  
Environmental Risk  
Prevention and  
Control”

“Twelfth Five-Year Plan  
for Comprehensive  
Prevention and  
Control of Heavy  
Metal Pollution”.

## Domestic waste classification system

In March 2017, the classification of domestic waste was implemented in **46 cities**.

In June 2019, the classification of domestic waste was started in **Prefectural-Level cities**

By the end of 2020, the 46 key cities must basically complete the **waste sorting and processing system**.

By 2022, at least **one district in each** city will achieve full coverage of domestic waste.

Before 2025, the **Prefectural-Level cities** should basically complete the domestic waste classification and treatment system.

## Clear waste action 2018

In 2018, the Ministry of Ecology and Environment organized a “Special action against environmental illegal behavior of solid waste”.

The “Special Action” (Clear Waste Action 2018) has invested a total of 1.961 billion yuan, cleaned up 38.012 million tons of solid waste and 69 new standardized landfills.



### Objectives

By 2020, an **indicator system** for the construction of “Zero-waste City” will be established and an **institutional and technical system** for the comprehensive management of “Zero-waste City” will be developed.

By then, the pilot cities will have made **marked progress** in major areas and key processes, with almost **zero growth** of large-scale industrial waste storage and disposal, **fully utilization** of major agricultural waste, a **decrease** in municipal solid waste generation and an increase in their recycling, **well-controlled management** of hazardous waste, **no illegal transfer and dumping** incidents occurred, and a group of backbone solid waste recycling enterprises established.

## Major Tasks

Strengthening the **top-level design** and giving full play to the macro guidance of the government.

Implementing green industrial production and promoting **zero growth** of the total storage and disposal of **large-scale industrial solid waste**.

Promoting green production in agriculture and full utilization of **major agricultural waste**.

Practicing green lifestyles and promoting source reduction and recycling of the **municipal solid waste**.

Enhancing risk prevention and control capabilities and strengthening comprehensive safety control of **hazardous waste**.

Stimulating the vitality of market players, fostering a new model of **industrial development**, improving policy effectiveness.

4

## Zero-waste City Pilot Program

### Implementation Process

1. Selecting pilot cities.

2. Formulating implementation plans.

3. Carrying out pilot program.

4. Conducting evaluation and summarizing experience.

**Thank You**





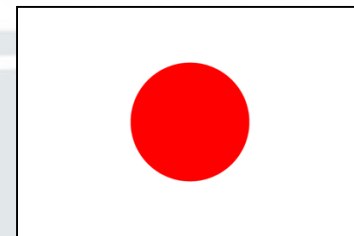
# Improved Waste Management to Address Marine Litter in Japan

September 24<sup>th</sup>, 2019

Office of Marine Environment, Ministry of the Environment



Ministry of the Environment





Fundamental Environmental Law 1994. 8

Fundamental Law for Establishing a Sound Material-Cycle Society 2001. 1

Waste Management and Public Cleansing Law

Law for Promotion of Effective Utilization of Resources

## Recycling Laws

**Container and Packaging Recycling Law**



2000. 4

**Home Appliances Recycling Law**



2001. 4

**Construction Materials Recycling Law**



2002. 5

**Food Wastes Recycling Law**



2001. 5

**End-of-life Vehicles Recycling Law**



2005. 1

**Small Home Appliance Recycling Law**



2012. 8

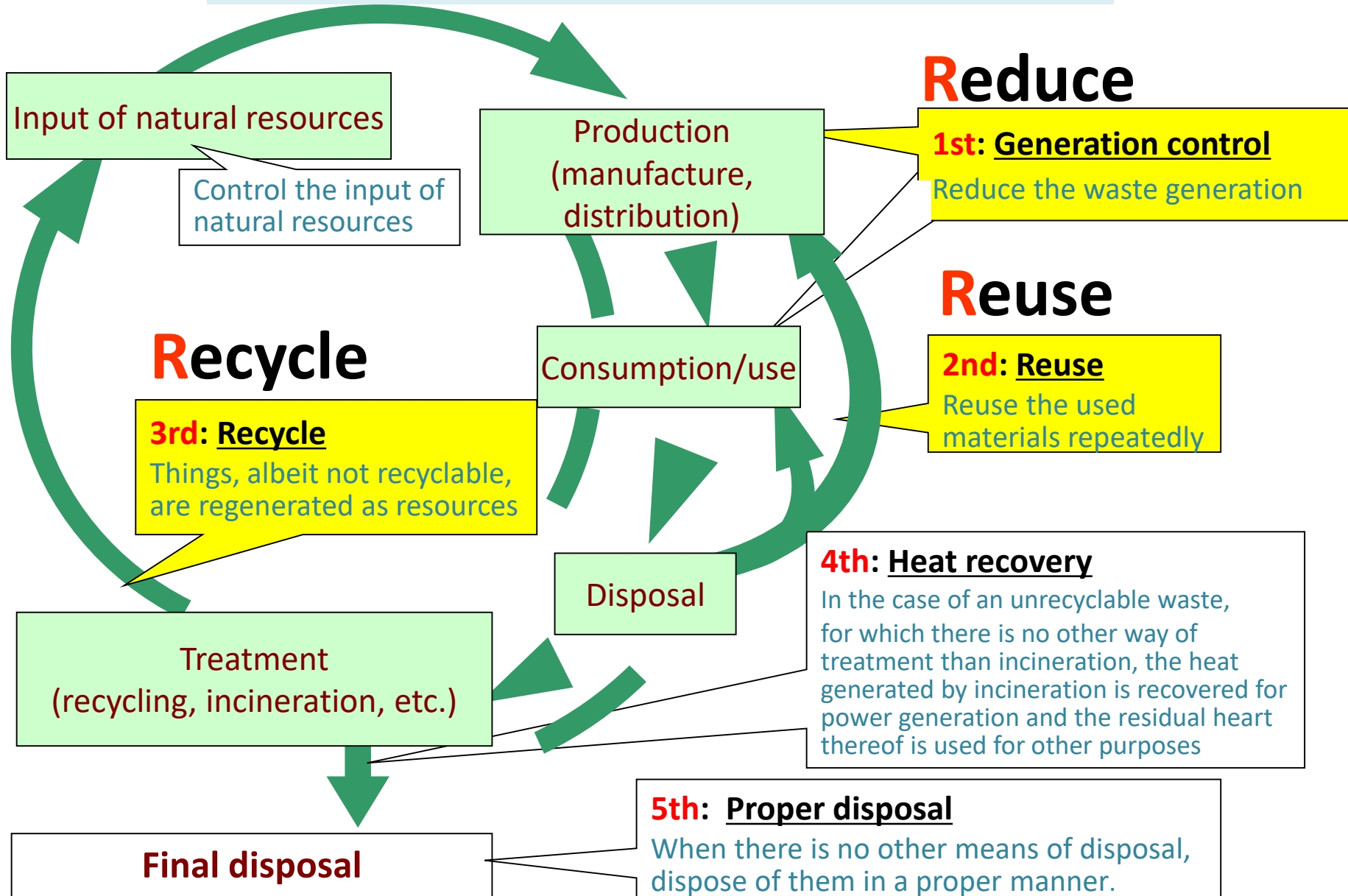
Law on Promoting Green Purchasing



# SMC Society and Hierarchy Concept



Reduce > Reuse > Recycle > Heat Recovery > Proper Disposal

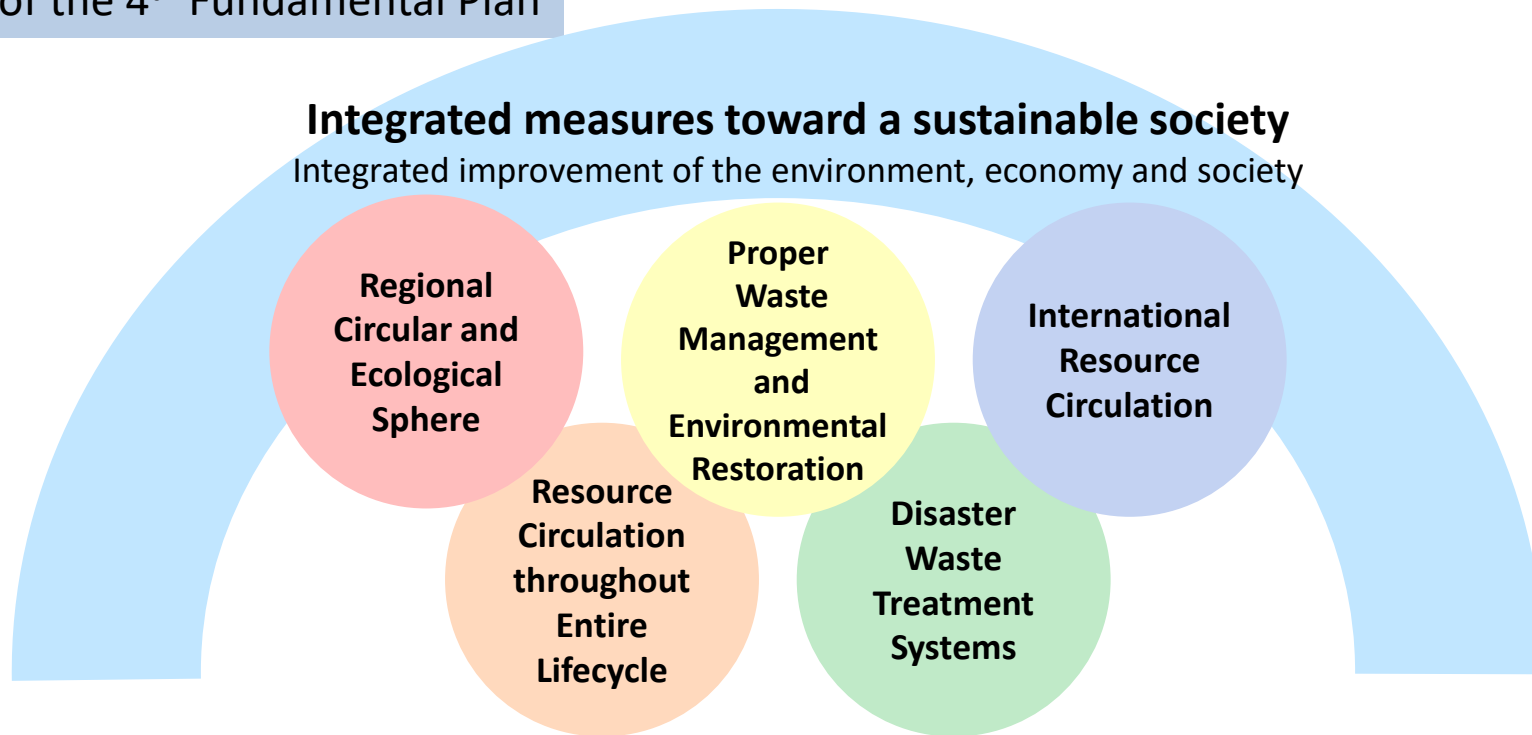




## Fundamental Plan

- This plan was formulated on the basis of the Basic Act on Establishing a Sound Material-Cycle Society (established in 2000).
- It sets a medium-to long-term course for the establishment of a sound material-cycle society in Japan, and indicates measures to be implemented in a strategic manner.
- The 4<sup>th</sup> Fundamental Plan was approved by the Cabinet on June 19<sup>th</sup>, 2018.

## Pillars of the 4<sup>th</sup> Fundamental Plan



## Sustaining fundamentals for the 3Rs and waste management

Technologies, human resources and awareness raising, plus information and databases





# Integrated Measures toward a Sustainable Society



## Vision

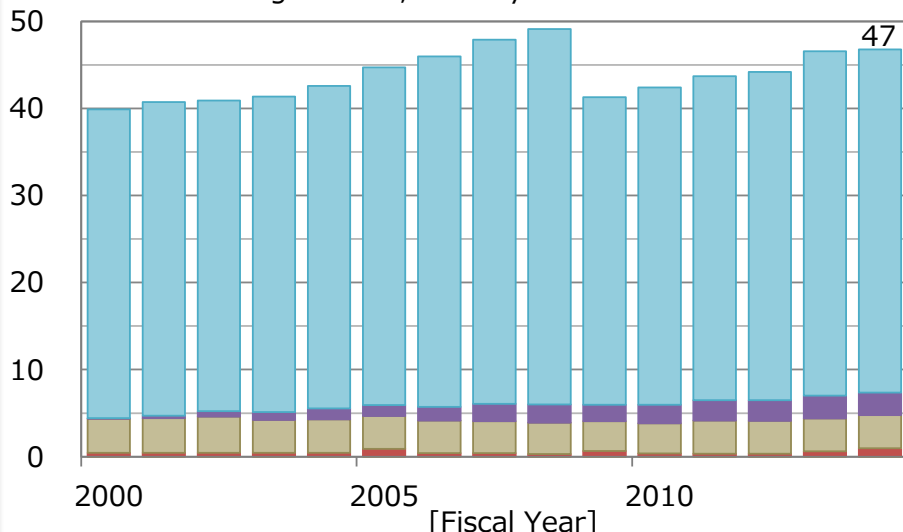
- ✓ A society where everyone can use natural resources in a sustainable manner
- ✓ Environmental loads restrained within the Earth's capacity
- ✓ A safe and healthy life secured in conjunction with a rich ecosystem
- ✓ Integrated improvements in the environment, economy and society

## Indicators and targets

### Market size of business related to a sound material-cycle society

**FY2025 target: approx. double from FY2000**

- Efficient use of resources and equipment
  - Longer lifespan (Housing)
  - Waste treatment and Recycling
  - Use of clean energy
  - Sustainable agriculture, forestry and fisheries
- [trillion JPY]



Source: MOEJ, Results of the 3<sup>rd</sup> Progress Evaluation of the 3<sup>rd</sup> Fundamental Plan

<http://www.env.go.jp/recycle/circul/keikaku.html>

### Amount of food loss

**FY2030 target:**

**Halve food loss from households from 2020**

[ten thousand tons]

FY	2000	2014	2015	2016	2017
Food loss from households	433	312	302	282	289

Note: provisional figures, to be further examined

Source: MOEJ

**Food loss from businesses**

**Targets to be set in the Basic Policy of the Food Recycling Act**



## Planned measures

- Measures aimed at establishing a Sound Social-Ecological and Material-Cycling Sphere
- Promotion and evaluation of 2R-related businesses, such as sharing
- National campaign towards halving food waste from households
- Waste management system suited to the aging society
- Energy production from unused woody biomass, e.g., thinnings
- Further promotion of waste energy utilization
- Measures against marine waste, including microplastics
- Facilitation and optimization of disaster waste treatment operations
- International expansion of waste treatment/recycling infrastructure

## SUSTAINABLE DEVELOPMENT GOALS 17 GOALS TO TRANSFORM OUR WORLD



Source: UN Information Centre



## Vision

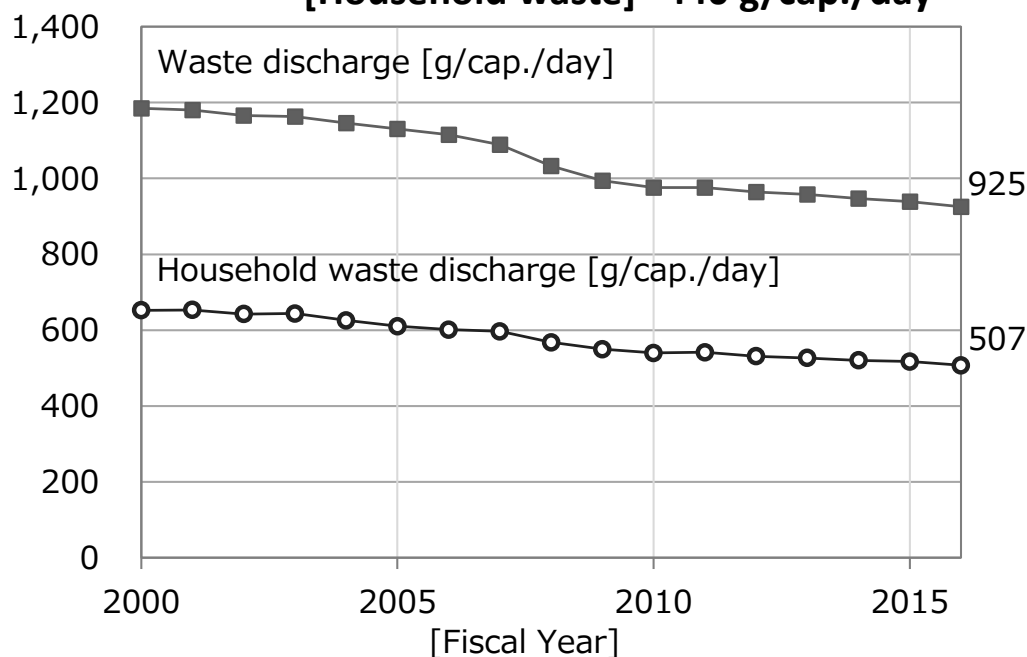
- ✓ Improve local resource efficiency and vitalize local economies based on an integrated approach toward circulation, low carbon and harmony with nature, utilizing renewable resources, stock resources and circulative resources
- ✓ Resilient and compact city planning

## Indicators and targets

Household and municipal waste generation per capita per day

FY2025 target: [Municipal waste] 850 g/cap./day

[Household waste] 440 g/cap./day



Source: MOEJ [http://www.env.go.jp/recycle/waste\\_tech/ippan/stats.html](http://www.env.go.jp/recycle/waste_tech/ippan/stats.html)

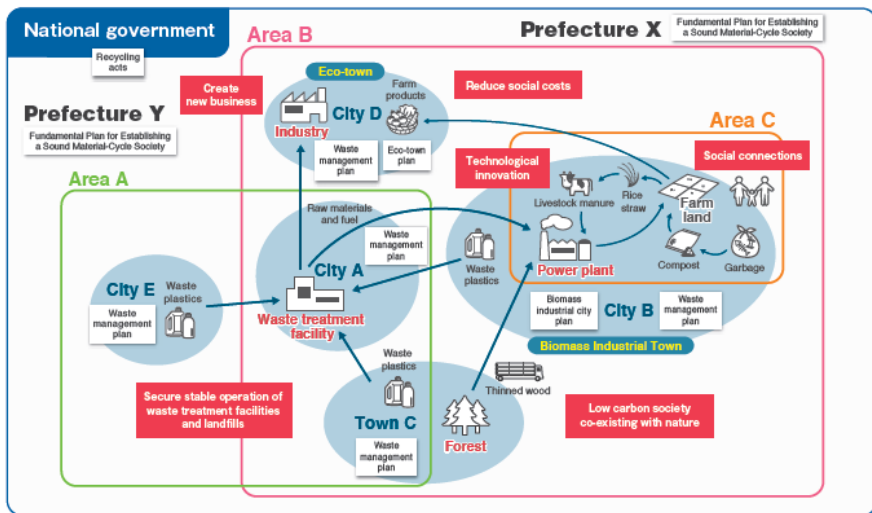


## Planned measures

### Measures aimed at establishing “Regional Circular and Ecological Spheres”

- Revealing barriers
- Feasibility studies
- Guidebooks for certain themes
- Sharing good practices
- Expert advice, etc.

Multi-layered resource circulation at an optimal scale, in consideration of regional characteristics and the nature of circulative resources



Source: MOEJ <http://www.env.go.jp/press/102392.html>

### Promoting the local use of biomass

- Production of fertilizer, livestock feed and high value-added products
- Conversion to renewable energy
- Energy recovery from methane fermentation of sewage sludge and food waste

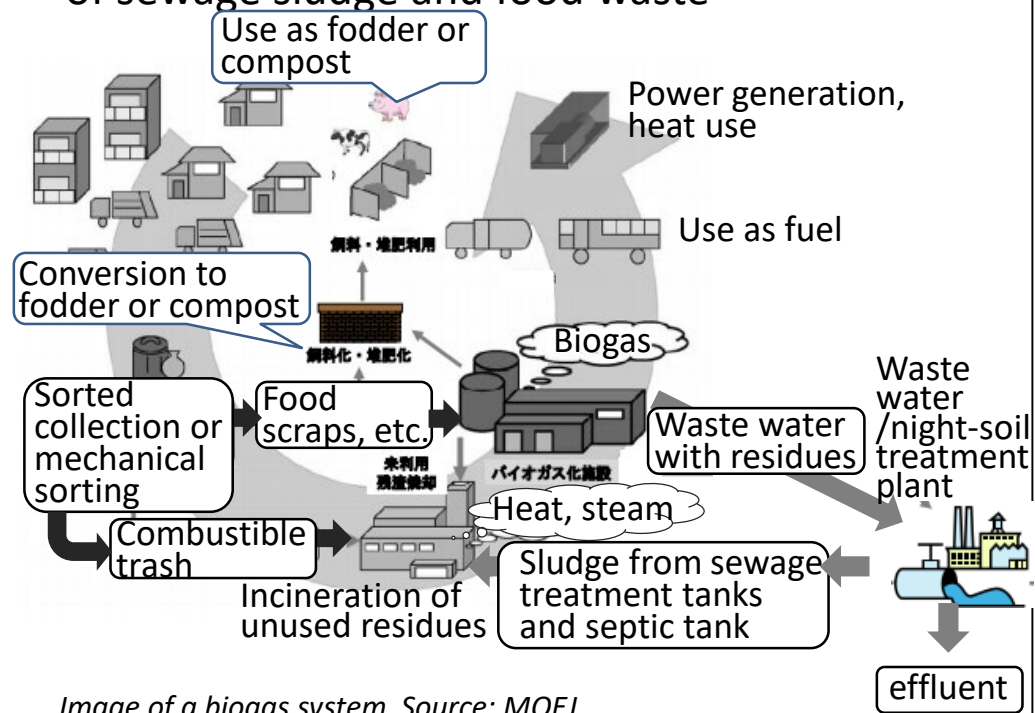


Image of a biogas system Source: MOEJ

<http://www.env.go.jp/recycle/waste/biomass/manual.html>





# Resource Circulation throughout the Entire Lifecycle

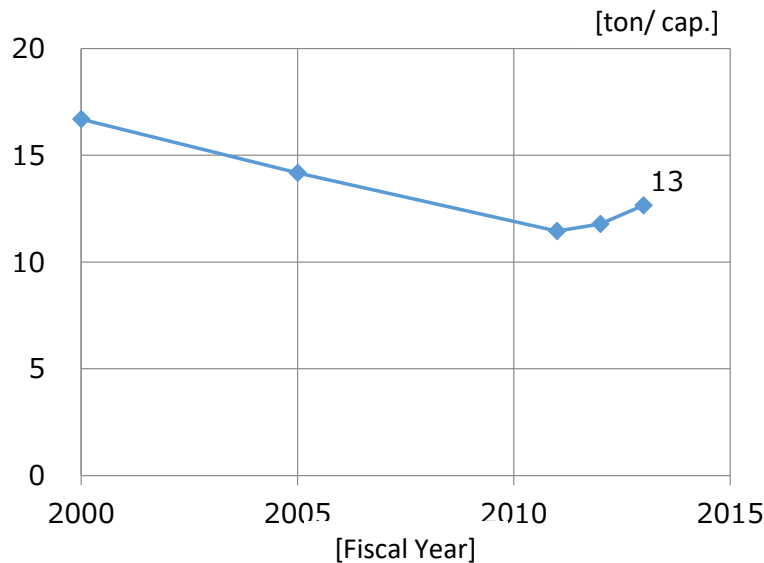


## Vision

- ✓ Make use of the 4<sup>th</sup> Industrial Revolution to conduct resource circulation throughout the entire lifecycle by “providing the necessary products and services to those in need of them, when necessary and in the necessary amounts.”

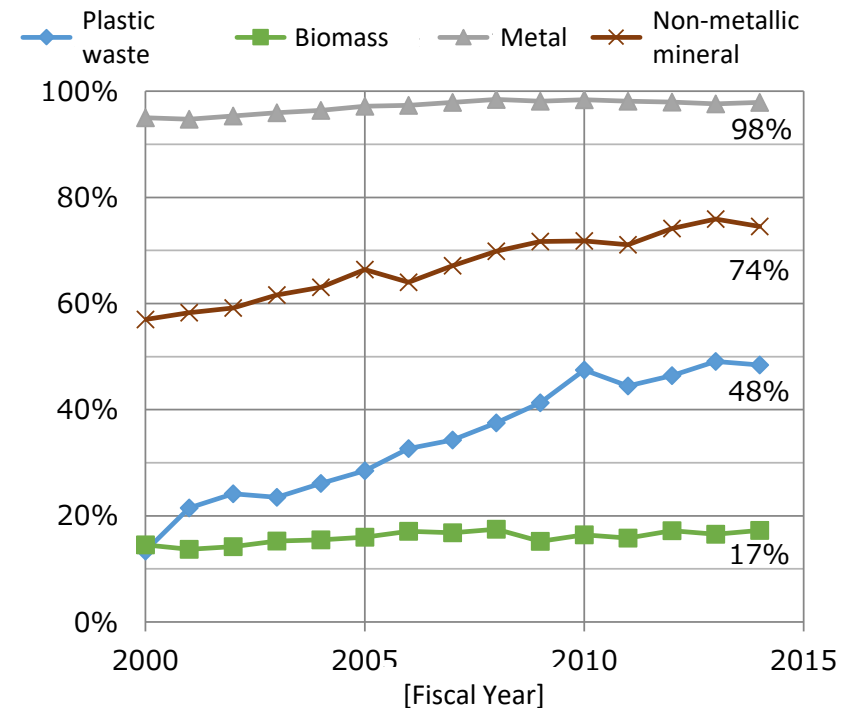
## Indicators and targets

### Natural resource consumption per capita based on raw material input (RMI)



Source: MOEJ, Results of the 3<sup>rd</sup> Progress Evaluation of the 3<sup>rd</sup> Fundamental Plan  
<http://www.env.go.jp/recycle/circul/keikaku.html>

### Cyclical use rate (waste base), by waste category



Source: MOEJ “Survey on the Study of Measures to Cope with Wide-Area Transfer of Wastes and Fact-Finding Survey on the Amount of Recycled Wastes (Chapter on Fact-Finding Survey on the Amount of Recycled Wastes).”

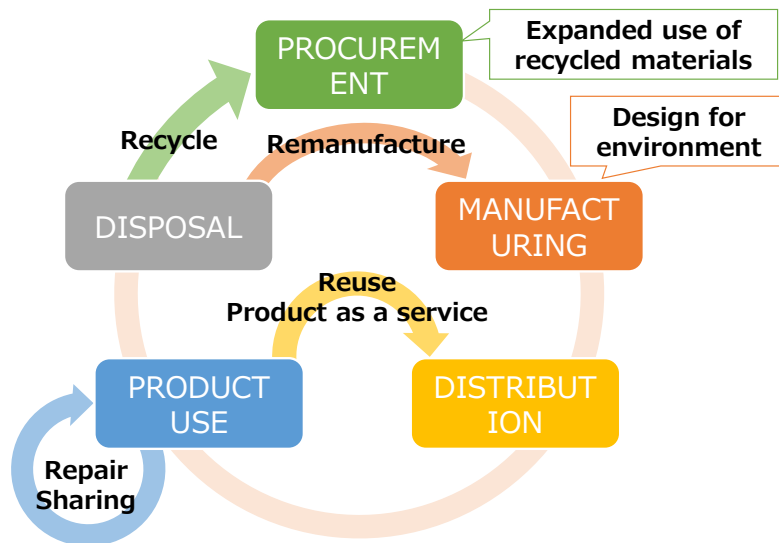


## Planned measures

### Strengthening upstream actions

- Design for environment
- Sustainable procurement
- Reduce, reuse (2R)
- Expanded use of recycled materials
- 3D modeling, etc.

### Promotion and evaluation of business related to 2Rs, including sharing



Source: MOEJ

### Priority areas

#### Plastics

- Establishment of a Plastic strategy and promotion of accompanying measures

#### Biomass

- National campaign to reduce food loss, measures against inappropriate recycling of food wastes, and efforts toward food recycling



A food loss prevention poster  
Source: MOEJ

#### Metals

- Promoting the collection and recycling of small home appliances in conjunction with the Tokyo 2020 Medal Project

#### Stone/construction materials

- Reducing construction and demolition wastes by strengthening buildings and prolonging their lifespan



Tokyo 2020 Medal Project  
Source: MOEJ

#### Recently popularized products and materials

- Mandatory recycling system for solar power generation facilities
- Diaper recycling

# Japan's Resource Circulation Strategy for Plastics

## Background

- ◆ Low rate of plastic waste usage and environmental pollution from marine plastics etc. as global issues
- ◆ Japan has taken the lead of domestic treatment and 3Rs in addition to making global contributions. On the other hand, challenges such as the second highest amount of plastic container and packaging waste per capita and import restrictions in Asian countries

## Key Strategies

## Basic Principle: "3Rs + Renewable"

## [Milestones]

Reduce etc.	<ul style="list-style-type: none"> <li>➢ Reduce the use of single-use plastics ("valuing" such as mandatory charge on plastic bags etc.)</li> <li>➢ Promote the development and use of substitutes for Petroleum based plastics</li> </ul>	<p><b>&lt;Reduce&gt;</b>                      (1) Cumulative suppression of 25% of single-use plastics by 2030</p> <p><b>&lt;Reuse/Recycle&gt;</b>                      (2) Reusable/recyclable design by 2025                      (3) Reuse/recycle 60% of containers and packaging by 2030                      (4) Effective use of 100% of used plastics by reuse and recycling etc. by 2035</p> <p><b>&lt;Recycling and Bio-based Plastics&gt;</b>                      (5) Double the use of recycled content by 2030                      (6) Introduce about 2 million tons of bio-based plastics by 2030</p>
Recycle	<ul style="list-style-type: none"> <li>➢ Easy-understanding and effective separate collection and recycling of plastic resources</li> <li>➢ Thorough land collection of fishing equipment etc.</li> <li>➢ Minimize costs and maximize the effective use of resources through collaboration and overall optimization</li> <li>➢ Development of domestic resource circulation system given the embargoes of Asian countries</li> <li>➢ Fair and optimized recycling system which promotes innovation</li> </ul>	
Recycled materials Bio-plastics	<ul style="list-style-type: none"> <li>➢ Improve usage potential (support technical innovation and infrastructure development)</li> <li>➢ Measures to stimulate demand (green public procurement, usage incentives etc.)</li> <li>➢ Handling of chemical ingredient information for recycling</li> <li>➢ Use bio-based plastics such as for burnable waste bags</li> <li>➢ Bio-plastic introduction roadmap/venous system management integration</li> </ul>	
Marine Plastic Measures	<p>Aimed for the prevention of marine pollution caused by the outflow of plastic waste (marine plastic zero emission)</p> <ul style="list-style-type: none"> <li>➢ Eradicate littering, illegal dumping, and proper disposal</li> <li>➢ Recovery of coastal drift items etc.</li> <li>➢ Understand the actual state of marine waste (advanced monitoring methods)</li> <li>➢ Microplastic discharge suppression measures (thorough reduction of microbeads in scrub products by 2020 etc.)</li> <li>➢ Promote alternative innovation</li> </ul>	
International Development	<ul style="list-style-type: none"> <li>➢ Support effective measures of developing nations (international cooperation and business development through exporting order-made packaging of Japan's soft and hard infrastructure and technology etc.)</li> <li>➢ Construction of global monitoring and research network (marine plastic distribution, study of ecological impacts etc., standardization of monitoring methods etc.)</li> </ul>	
Infrastructure Development	<ul style="list-style-type: none"> <li>➢ Establishment of social systems (soft and hard recycling infrastructure and supply chain structuring)</li> <li>➢ Technology development (renewable resource substitutes, innovative recycling technologies, consumer lifestyle innovation)</li> <li>➢ Study and research (impact of microplastics, discharge conditions, discharge suppression measures)</li> <li>➢ Collaboration (develop "Plastics Smart" to bring efforts under one flag)</li> <li>➢ Promote resource circulation related industries</li> <li>➢ Information infrastructure (ESG investment, ethical consumption)</li> <li>➢ Infrastructure for overseas expansion</li> </ul>	

- ◆ Not only solve worldwide resource and environmental issues, including the Asia-Pacific Region, but also realise economic growth and employment creation  
 ⇒ Contribute to sustainable development
- ◆ Promote necessary investment and innovation (in technology and consumer lifestyle) by aiming to achieve milestones through collaboration with all the citizens

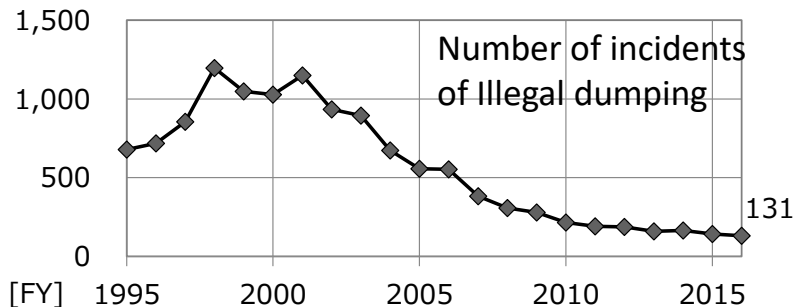


## Vision

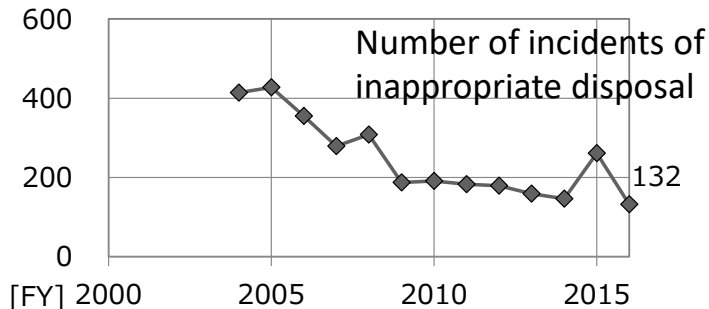
- ✓ A society with appropriate waste treatment systems and technologies
- ✓ A society in which the marine litter issue has been resolved, with no inappropriate disposal, and abandoned buildings properly demolished/removed
- ✓ Restoration of the environment in areas affected by the Great East Japan Earthquake, with future-oriented reconstruction

## Indicators and targets

### Number of incidents of Illegal dumping and inappropriate disposal



### Number of incidents of inappropriate disposal

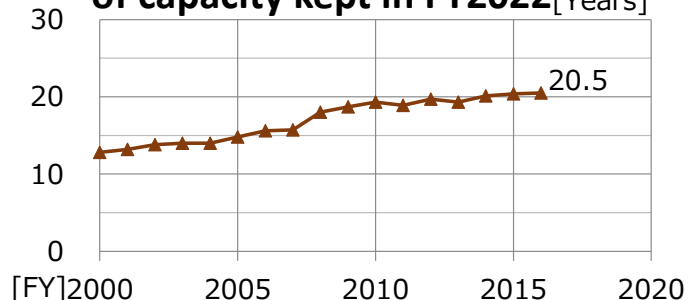


Note: Includes incidents involving the dumping of industrial waste covered by prefectures and cities designated by government ordinance with an amount of waste per incident larger than 10 t (including all incidents involving special controlled waste.) Cases involving sulfuric acid pitch and ferosilt are not included.

Source: MOEJ [https://www.env.go.jp/recycle/ill\\_dum/santouki/index.html](https://www.env.go.jp/recycle/ill_dum/santouki/index.html)

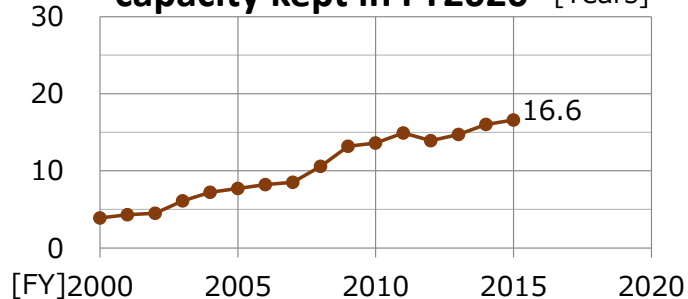
### Residual years of landfills

#### Municipal waste: 20 years worth of capacity kept in FY2022 [Years]



Source: MOEJ [http://www.env.go.jp/recycle/waste\\_tech/ippan/stats.html](http://www.env.go.jp/recycle/waste_tech/ippan/stats.html)

#### Industrial waste: 10 years worth of capacity kept in FY2020 [Years]



Source: MOEJ <http://www.env.go.jp/recycle/waste/kyoninka.html>





## Planned measures

### Further promotion of appropriate waste management

- Stable, efficient waste treatment systems
- Stronger measures against global warming and disasters in waste treatment systems
- Waste treatment facilities that create added value for the local community
- Waste management systems suited to the aging society
- Further mandates for electronic manifests
- Restoration and advancement of the recycling industry



*Waste treatment facilities as local energy and emergency centers*  
Source: MOEJ

### Restoration of environments

- Measures against marine litter, including microplastics
- Measures for abandoned buildings, i.e., empty houses and stores



*Volunteers cleaning a beach*  
Source: MOEJ

### Restoration of the environment affected by the Great East Japan Earthquake

- Steady implementation of appropriate disposal of waste contaminated by radioactive substances
- Reduction of volume and reuse of soil removed for decontamination
- Pursuit of future-oriented reconstruction in the affected areas



*Crushing and sorting facility at a temporary site in Naraha, Fukushima*  
Source: MOEJ



*Temporary incineration facility in Naraha, Fukushima*  
Source: MOEJ



# Overview of the Waste Management Law



Purpose: conservation of the life environment through reduction of waste production, proper waste separation, storage, collection, transport, recycling, disposal, etc.

**Waste:** Garbage and unneeded materials in solid or fluid form

## General Waste

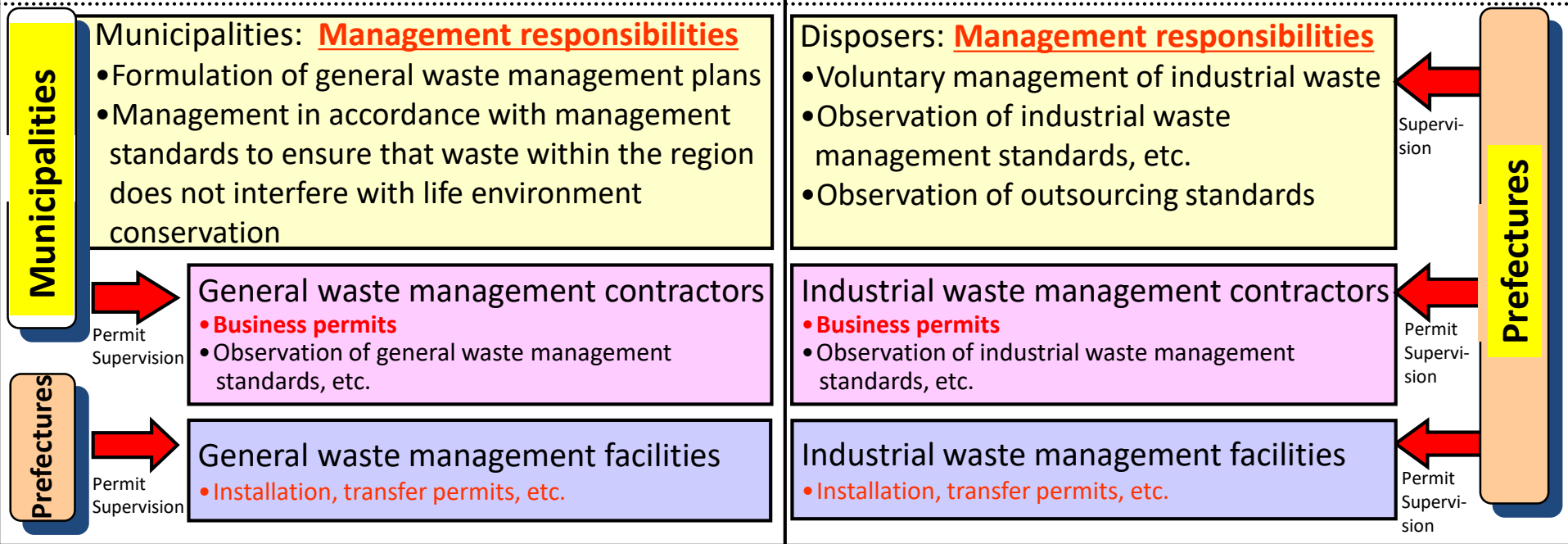
Non-industrial waste (household refuse, etc.)

## Industrial Waste

Cinders, sludge, waste oil, waste plastics, etc., produced by business activities

### Government

- Basic policy formulation
- Setting of management and facility standards
- Emergency measures, etc.



\*A special government-certified system exists for promoting wide-area recycling by manufacturers.



# Flow of Municipal Solid Waste in Japan (FY 2016)



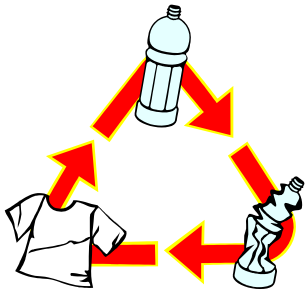
## Generation

43.17 mill. ton

Waste reduction through economic incentive and awareness rising

8.79 mill. ton

## Recycling



38.62 mill. ton

## Treatment (Incineration, etc.)



**1,162 facilities**

- Energy recovery: 764 facilities
  - Power generation: 338 facilities
- 1,907 MW**

3.98 mill. ton

## Final Disposal





# Waste to Energy Plants



**Clean and Safe**

**Efficient Energy Recovery  
(Steam/Electricity)**

**Waste Volume Reduction  
up to 90%  
(1,000 tons<sub>waste</sub> → 100 tons<sub>ash</sub>)**

**Suitable for Large Amounts  
of Waste  
that other technology can **NOT** handle**



**Meguro (Tokyo) – Stoker, 600 TPD**



**Minato (Tokyo) – Stoker, 900 TPD**





# Incineration of Municipal Waste



The rapid spread of incineration caused dioxin emission issues in the 1980s in Japan. Today, technological advancement has solved this issue and incineration is conducted safely.

**Dioxins**  
⇒ Mainly generated in the temperature range of 300 - 500°C

Measures

- Complete combustion under continuous operation (800°C, >2sec)
- Implementation of rapid quenching equipment (<200°C)
- Implementation of flue gas treatment equipment (e.g. bag filters)
- Continuous monitoring of flue gas (temperature, CO, O<sub>2</sub>, etc.)



Today, incineration plants can be sited in urban areas. The photo on the left shows an incineration plant in Shibuya Ward, one of the most populated parts of Tokyo

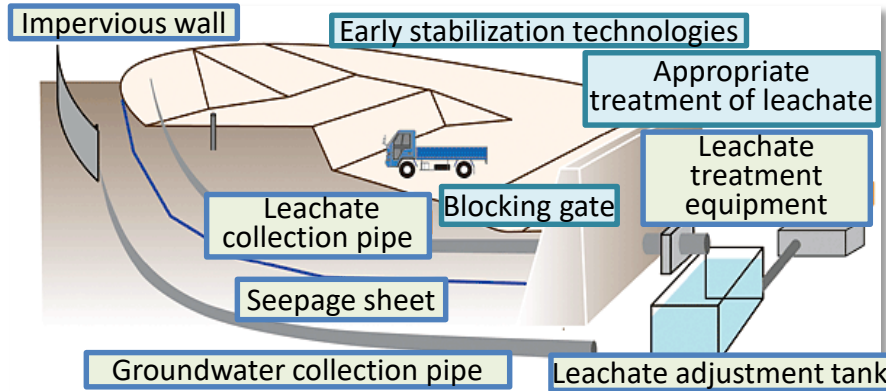
**Emission standards for dioxins**  
< 0.1 ng-TEQ/m<sup>3</sup>N  
(Equivalent to international standard)

※Photo Reference: Google Map



## Improvement of landfill sites

Japan has adopted leachate-controlled-type landfill sites for general waste, equipped with systems to prevent contamination of groundwater and land



## Requirements for sites

- Equipped with water shields to prevent contamination of groundwater and soil
- Equipped with leachate collection pipes
- Covered with 50 cm of soil for every 3 m of landfill



- Intermediate processing of all waste by incineration, etc.
- Reduction of landfill amounts



- Incineration of plastic waste
- Recycling of ashes in cement





Various penalties are defined for mismanagement of industrial waste, particularly for illegal dumping, which have caused many serious issues in Japan in the past

## Major violations regarding disposal of industrial waste

Violation	Subject to penalties
Illegal dumping, unauthorized operations	Contractor
Outsourcing to unauthorized contractors	Waste generator
Defect or falsification of manifest	Generator and contractor
Incomplete management of appropriate disposal, breach of duty to keep a manifest	Waste generator and contractor



Order for revocation of license and cessation or improvement of operations depending on severity of infractions, and, if the infraction leads to damage to the surrounding environment, order for remediation

Penalty for individuals/corporations committing illegal dumping  
Tort-feasor : Less than 5 years/10 million yen  
Corporate : Less than 300 million yen

In case of inappropriate manifests, the generators of the waste are also held liable and required to pay for items such as recovery costs



## Policies to promote appropriate sorting (case of Kitakyushu City)



All types of waste are collected at the same station but the type collected differs by day

Sorting instructions are displayed at the collection station

Instruction manuals are prepared to explain sorting and use of different waste bags for each waste type





# Environmental Education



It is essential to promote environmental education from early childhood so that citizens understand the necessity of the material-cycle society and cooperate to achieve it through recycling or reducing.

## Environmental education in schools or local facilities (case of Kitakyushu City)

**10 わたしたちの生活とリサイクル**

**1 3R (アール) とは何だろう?**

**まず Reduce**  
リデュース  
発生よく前

**次に Reuse**  
リユース  
再利用

**最後に Recycle**  
リサイクル  
再生利用

できるだけ大切に買って、こみを出さないようにします。  
●買った物かごやマイバッグなどを使い、スーパーの袋などを再利用するようにする。  
●買った商品は簡単につづんでもらうようにする。

作り直したり、修理したりして、再び使います。  
●服を作り直し (リフォーム) たり、こわれたおもちゃを修理したりして使う。  
●バザーやフリーマーケットに品物を出すようにする。

使う物に作りかえて、再び使える物にします。  
●古新聞や牛乳パックを新しい新聞紙やトイレトペーパーなどに作りかえる。  
●生ごみはコンポスト化装置でたい肥にする。

**3アールに取り組みないで、このままごみを出し続けると……**

**みんなであそぼう! きれいな地球**

地球の資源がなくなっちゃう  
このまま、資源を使い続けると、石油・石炭など、どんどん減ってしまいます。

**2 どんな物がリサイクルされているのでしょうか。**

どんな物に生まれかわっているのか、調べてみましょう。

あきかん・びん ペットボトル プラスチック製容器物 トレイ 紙パック けい光管 小電機 紙くず

新しいあきかん-びん かんごみ袋のプラスチック製容器物 古いトレイなど

紙パック エココップなど 古いけい光管 小電機

**あきかんのリサイクル**

スチールかんは、10本中約8本、アルミかんは、10本中約7本の割合で、リサイクルされています。  
とくに、アルミかんは作りかえる際のエネルギー消費も少なく、回収されたかんの約80%がアルミかん用素材として再利用されます。

**紙パック・トレイ・けい光管のリサイクル**

回収ボックスは市内のスーパーや市民センターなどに設置されています。けい光管の回収ボックスはまちの電気やさんにあります。

どこにトレイの回収ボックスがあるかさかしてみよう。

**Recycling familiarization classes, exhibition on pollution, etc. at a local museum**

Textbooks for environmental education tailored to each grade

The background features a light blue gradient. In the upper right, there is a cluster of stylized birds in flight, represented by simple curved lines. At the bottom, a dark blue horizontal bar represents the ground or water, with a light blue wavy line above it suggesting a horizon or a path.

**Thank You for your attention .**

# 2019 NOWPAP-TEMM Joint Workshop on Marine Litter Management

## Session 2. Improve Waste Management to Reduce Waste Leakage into the Marine Environment

# Waste Management for Reduction of Plastic Litter in the Ocean in Korea



Korea Environment Institute  
Sora Yi



# I . The Issues and Impacts of Plastic waste in the Ocean





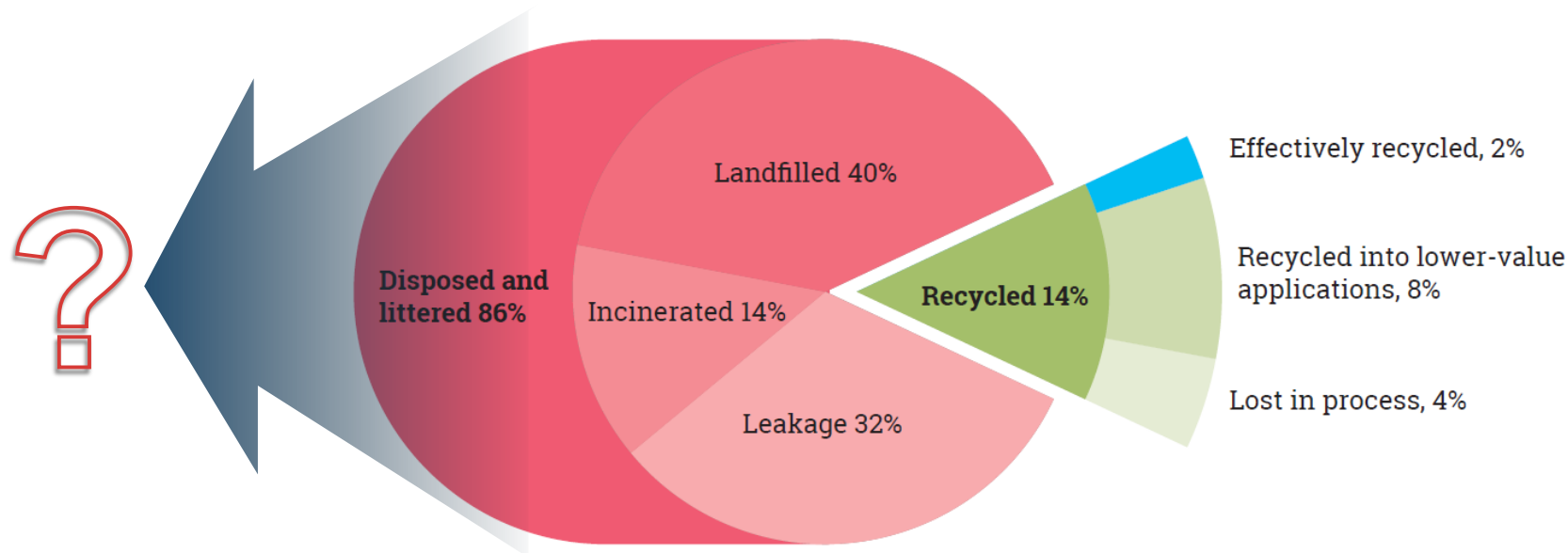
# 1. Issues of Plastic Waste in the Ocean



## Treatment of Plastic Packaging Waste Worldwide

- As of 2016, among the **approximately 242 million tons of plastic waste (72% of plastics produced), plastic packaging, which are disposable products, take up the largest portion (36%)** in terms of the plastics produced for industrial use
- Data on the global treatment of plastic packaging waste show that **2% are efficiently recycled, 8% are recycled into low-grade products**, and **90%** are either landfilled, incinerated, leaked into the environmental or lost during processing
- Landfilled plastic waste degrades and wears down to leak into water, and incinerated plastic leaks into the atmosphere in the form of microplastics.

Total packaging waste in 2015: 141 million tonnes



# 1. Issues of Plastic Waste in the Ocean



## Source of Ocean Plastics – Land-based Source

**Landfills/Open Dumps in Coastal Regions**



Saida Dump, Lebanon (image on the left) received waste since 1975 and was only converted into sanitary landfill after 2009

**Transport of plastic waste by water channels**



**Storm drainage clogged with plastic litter that flows into the Kpeshie Lagoon and sea in Ghana (Konadu-Agyeman, 2018)**



**Littering on Beaches**



# 1. Issues of Plastic Waste in the Ocean



## A Material Flow Analysis of Plastics from Production to the Ocean

- Vera Kellen of the University of Vienna analyzed the material flow of plastics in oceans worldwide to compare the material flows **under ordinary circumstances and after a natural disaster (tsunami)**
- 171Mt/year of plastic waste, which accounts for about **60% of global plastics production**, is generated, among which **29.7% are leaked into the environment**; in ordinary circumstances, 4.76Mt/year of plastics flow into the marine environment.

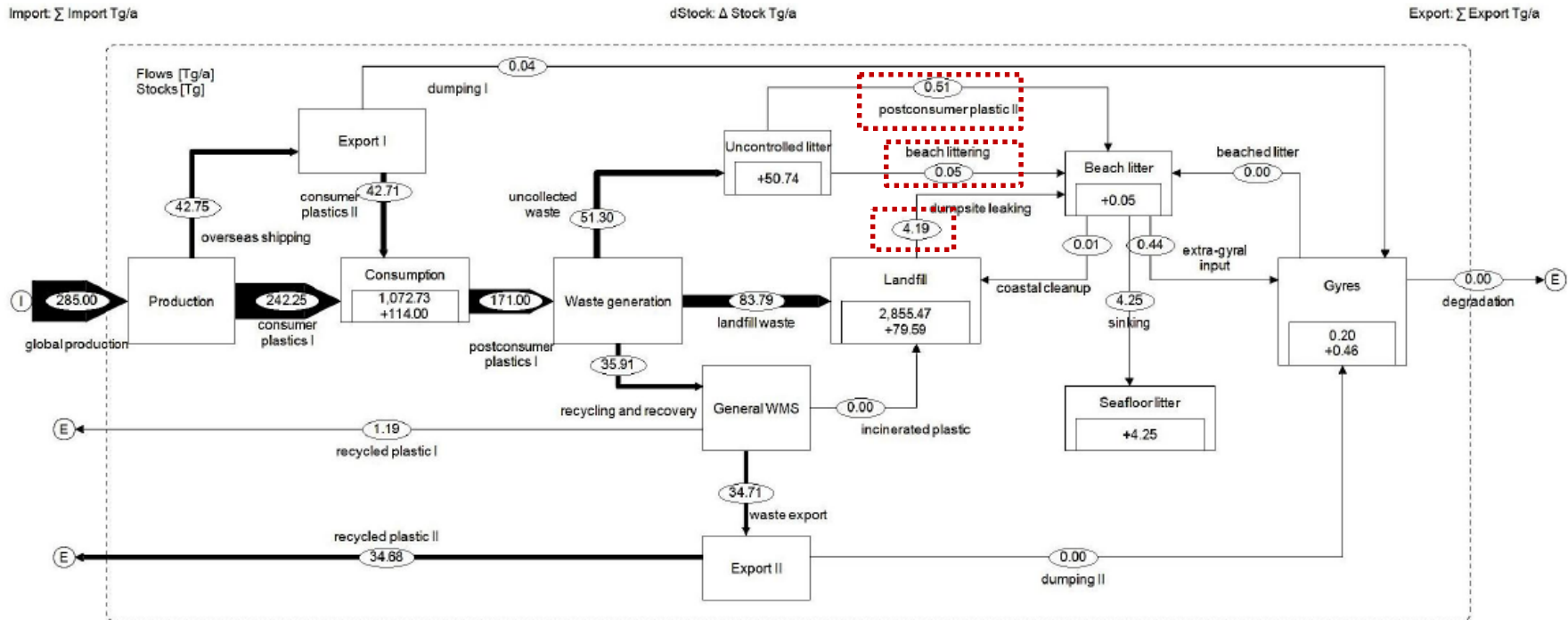


Figure 5: Global Plastic Flow from production to sink on everyday conditions, baseline year 2014



# 1. Issues of Plastic Waste in the Ocean



## A Material Flow Analysis of Plastics from Production to the Ocean

- After a tsunami, the flow of plastics into the ocean increases by 80% to 6 Mt / year
- The difference in the amount of plastics indicate that a significant amount of waste sinks to the deep sea, and when accounting for the amount that accumulates in the ocean every year, severe marine pollution is caused by plastic waste

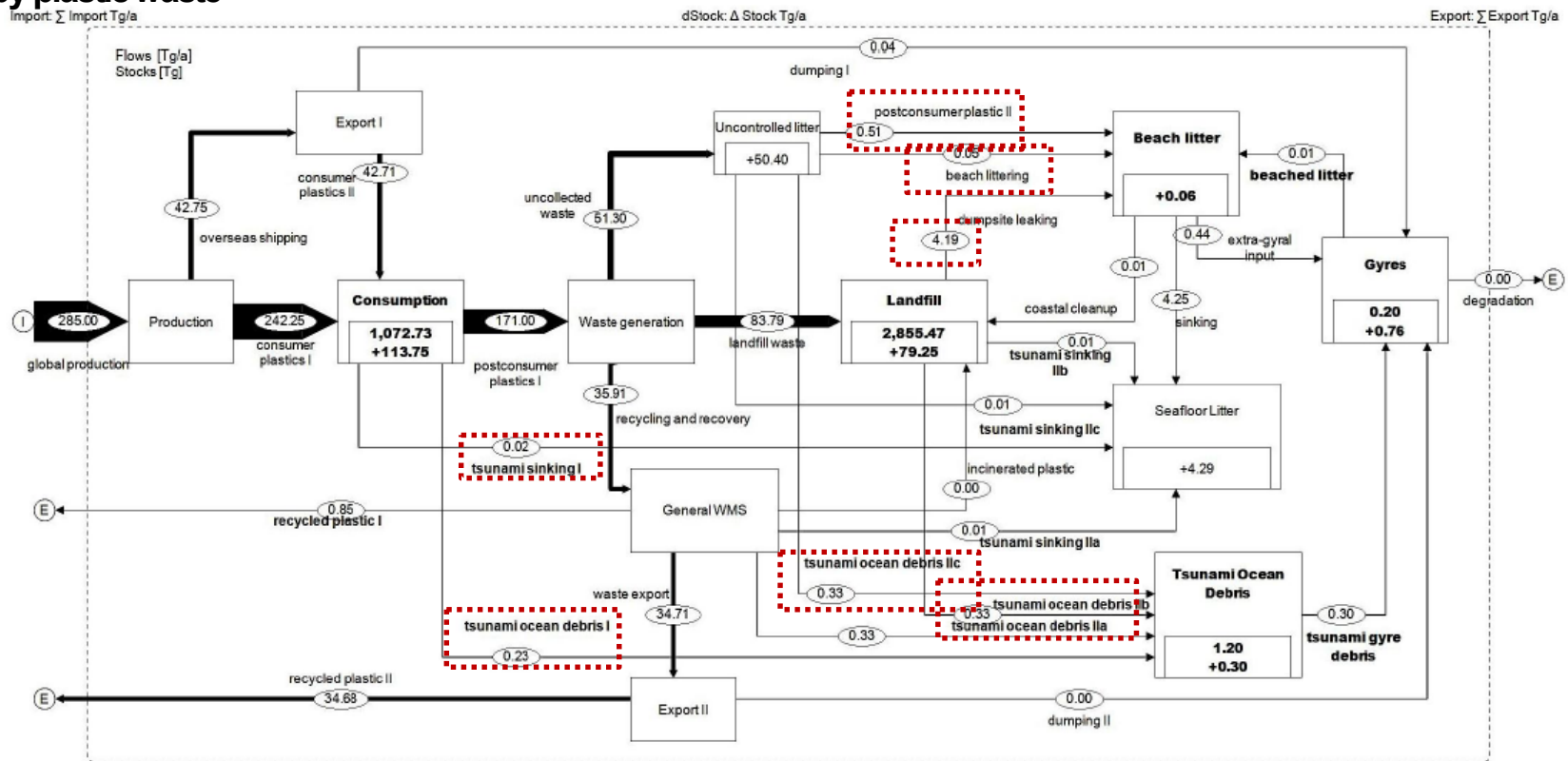


Figure 6: Global Plastic Flow from production to sink in the case of a tsunami, baseline year 2014



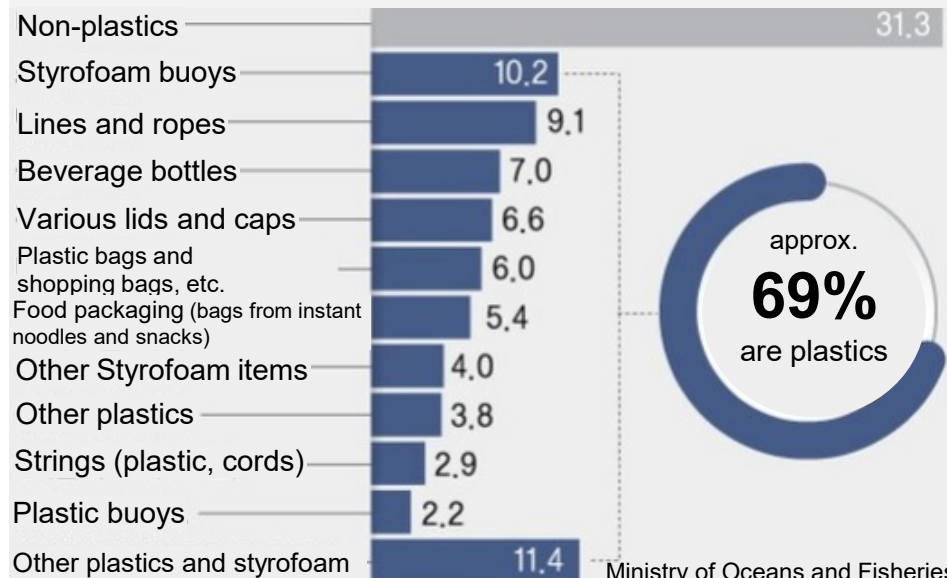
# 2. Impacts of Plastic Waste in Korea



## Korea's Marine Litter Situation

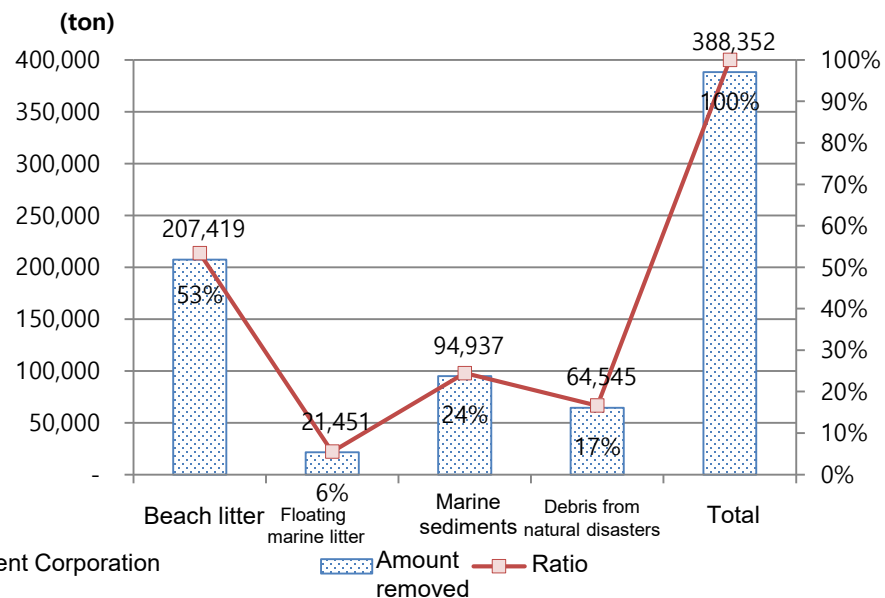
- As of 2012, 91,195 tons of marine debris is generated every year, of which **85% (77,880 tons) is plastic waste** (Shim, 2019, Jang et al., 2014)
- Of the estimated 152,241 tons of existing marine waste, **36% are waste leaked into the ocean from land and 64% from marine activities.**
- 90% fall under marine sediment debris, but only **24% of the 388,352 tons of marine debris accumulated over 5 years have been removed (collected)**

Composition of Korea's marine debris  
(Unit: %, 2008-2018)



Ministry of Oceans and Fisheries  
Korea Marine Environment Management Corporation

Marine debris removed (collected) from 2012-2016



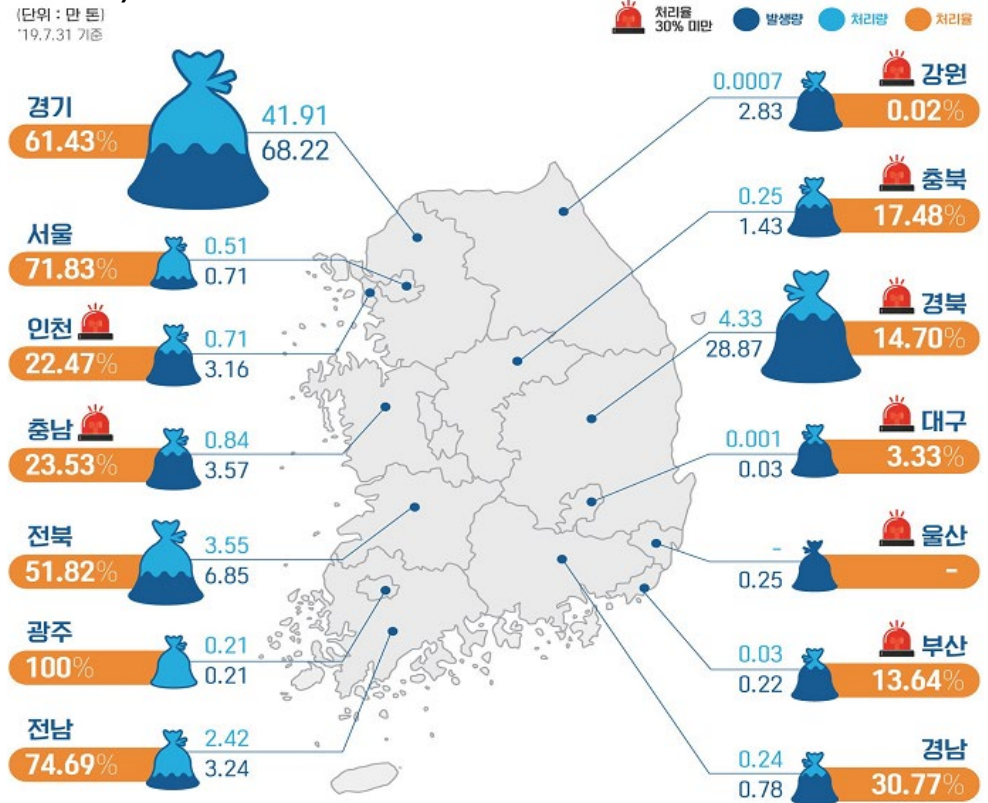
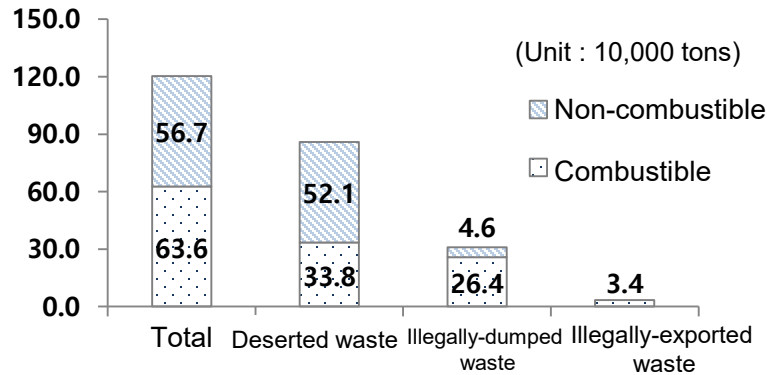
Ministry of Oceans and Fisheries · Korea Marine Environment Management Corporation (2017) Annual report on marine debris management

# 2. Impacts of Plastic Waste in Korea



## Illegally Waste Disposal in Korea

- The amount of illegal waste generated in Korea is about 1,203,000 tons, consisting of 859,000 tons of deserted waste (71.4%), **310,000 tons of illegally-dumped waste (25.8%)**, and 34,000 tons (2.8%) of illegally-exported waste.
- Among these, **combustible waste such as plastic waste make up 636,000 tons (52.9%)** and non-combustible waste such as construction waste take up 567,000 tons (47.1%).
- Out of 1,203,000 tons of illegal waste, 550,000 tons (45.7%) have been treated by the polluters and through administrative execution (as of August 2019).



Illegal dumping of mixed combustible waste (Dongducheon city, 20 tons, Feb 2019)



Overflowing sanitary landfill (stench, leachate) (Euisung, 17.3 tons, Jun 2019)

Source: Press release by the Ministry of Environment (August 5, 2019)

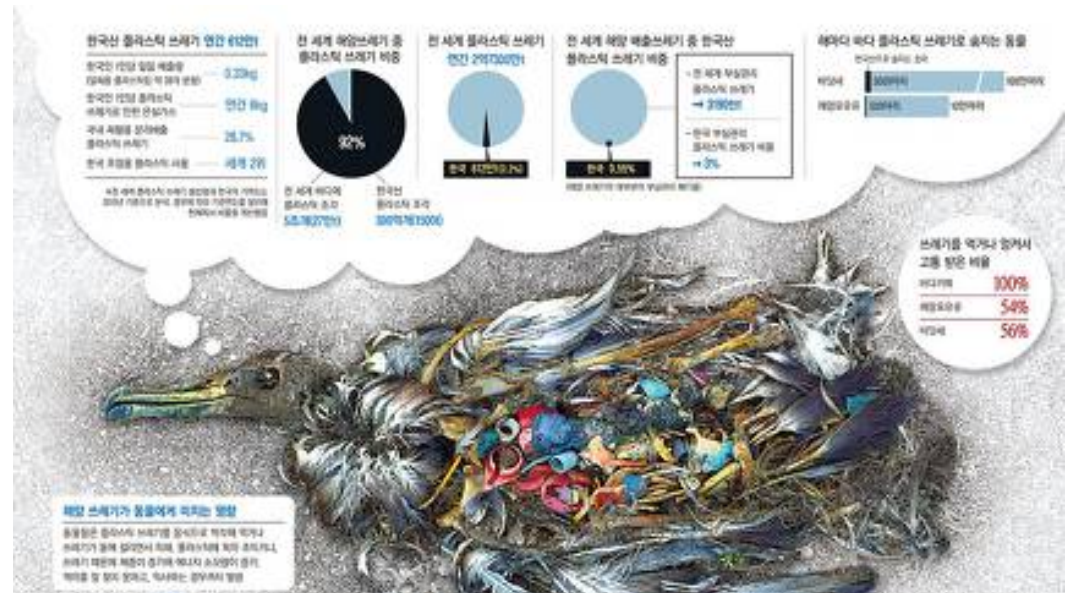


# 2. Impacts of Plastic Waste in Korea



## Effects of Plastic Waste on the Ecosystem in Korea

- (Joint research by The Biodiversity Foundation and the Department of Zoology, Cambridge University, UK)
**“Report on the Paths of Waste originating from Korea,” “The Effect of Korean Plastic Waste on Marine Animals” (July 2019)**
- 92% of marine debris is plastic waste
- It is estimated that 100% of sea turtles, 54% of marine mammals, and 56% of seabirds are negatively affected by marine debris.
- (National Institute of Ecology) 20 sea turtles, which live an average of 150 years, are found lying dead on the coasts of Korea every year due to intestinal obstruction by plastic waste.



**Plastic waste generated in Korea brings the death of 5,000 sea birds and 500 sea mammals every year.**





# II. Waste Management and Regulations to Reduce Plastic Waste Generation



<http://blog.naver.com/PostView.nhn?blogId=slcdream&logNo=221556491047>



<http://blog.naver.com/PostView.nhn?blogId=slcdream&logNo=221556491047>



<http://blog.naver.com/PostView.nhn?blogId=slcdream&logNo=221556491047>

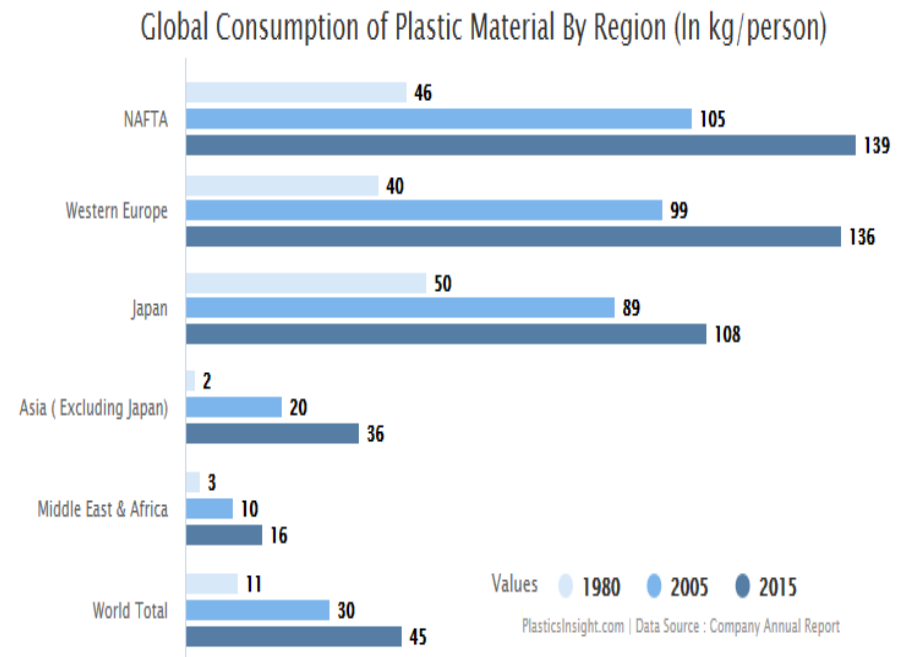
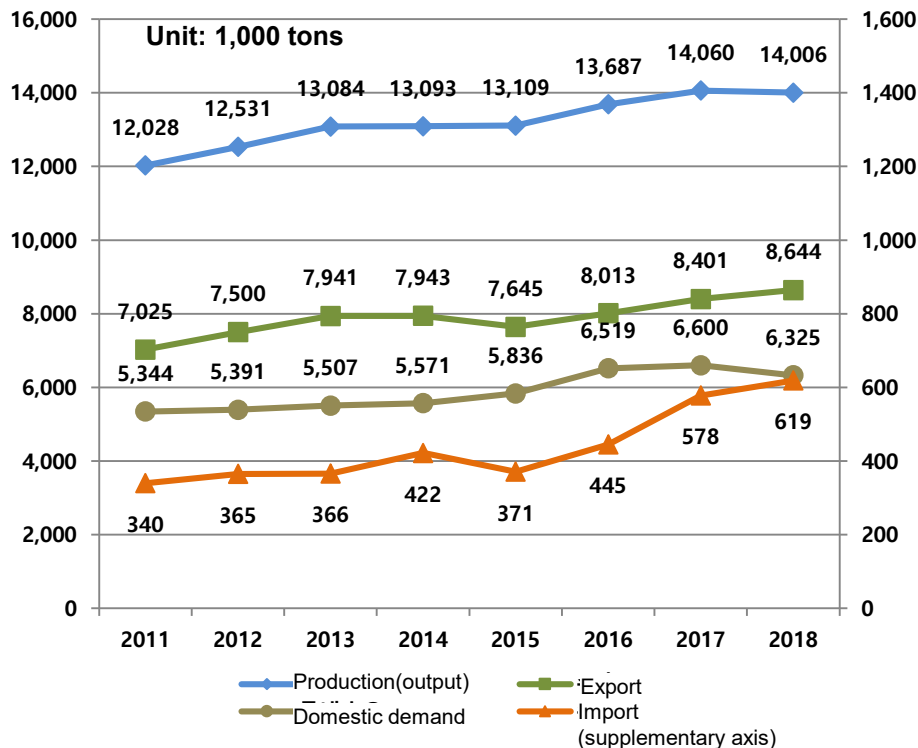


# 1. Plastic Waste Management



## Plastics Production/Consumption in Korea

- Korea's plastics production has **increased by an annual average of 2.2%** from 2011 to 2018, and in 2017, a record-breaking total of 14 million tons of plastics were produced.
- **Plastics consumption increased by 2.5% per annum from 2011 to 2018 => Production and consumption is expected increase by 1.5 times by 2040**
- From 2011 to 2018, the per capita consumption of plastic steadily increased, recording **141 kg per capita consumption** in 2018

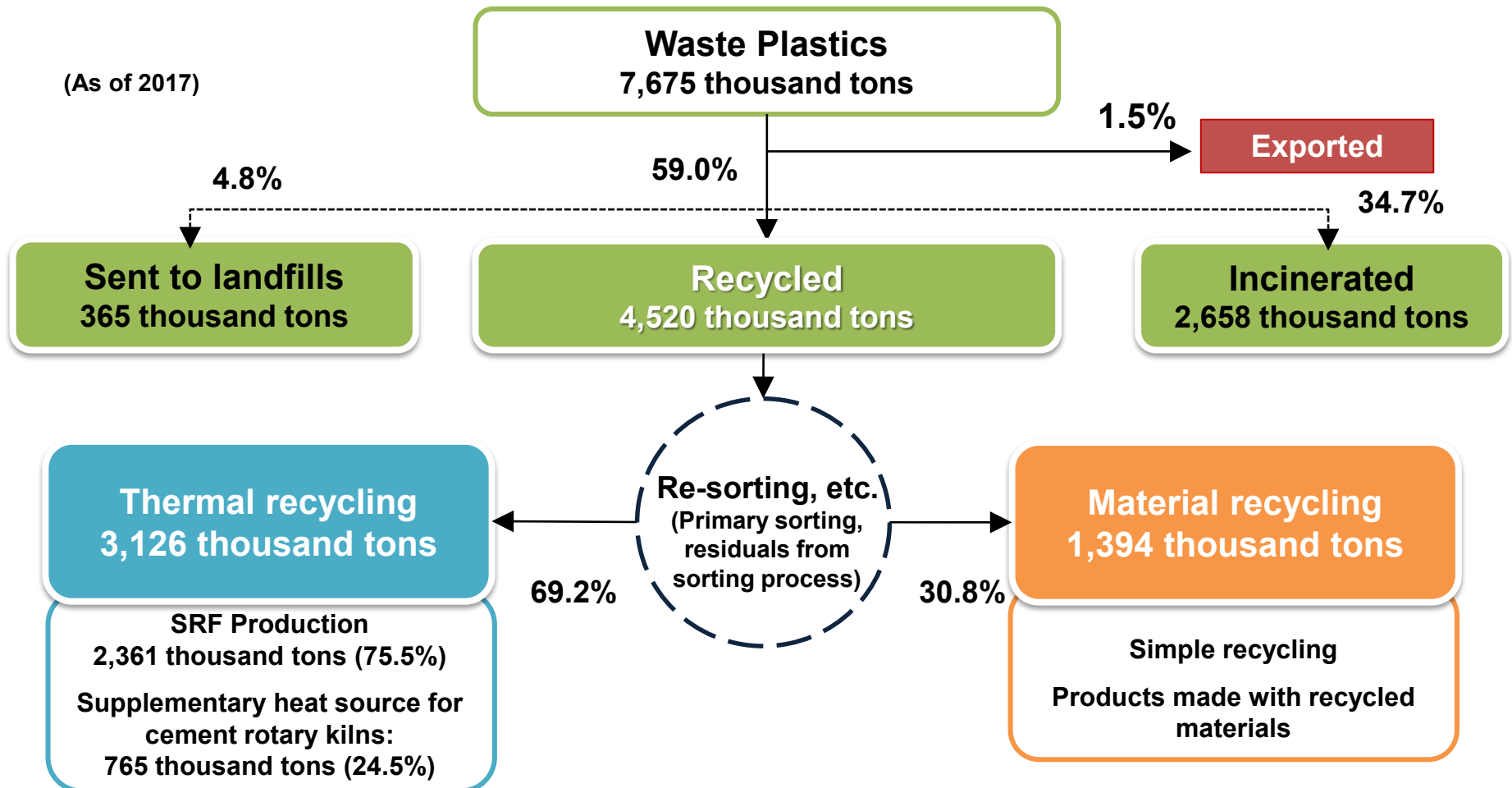


# 1. Plastic Waste Management



## Plastic Waste Treatment in Korea

- In 2017, 18.2% of plastic wastes were recovered through material recycling, 40.7% were converted into energy, 34.7% were incinerated, and 4.8% were landfilled.

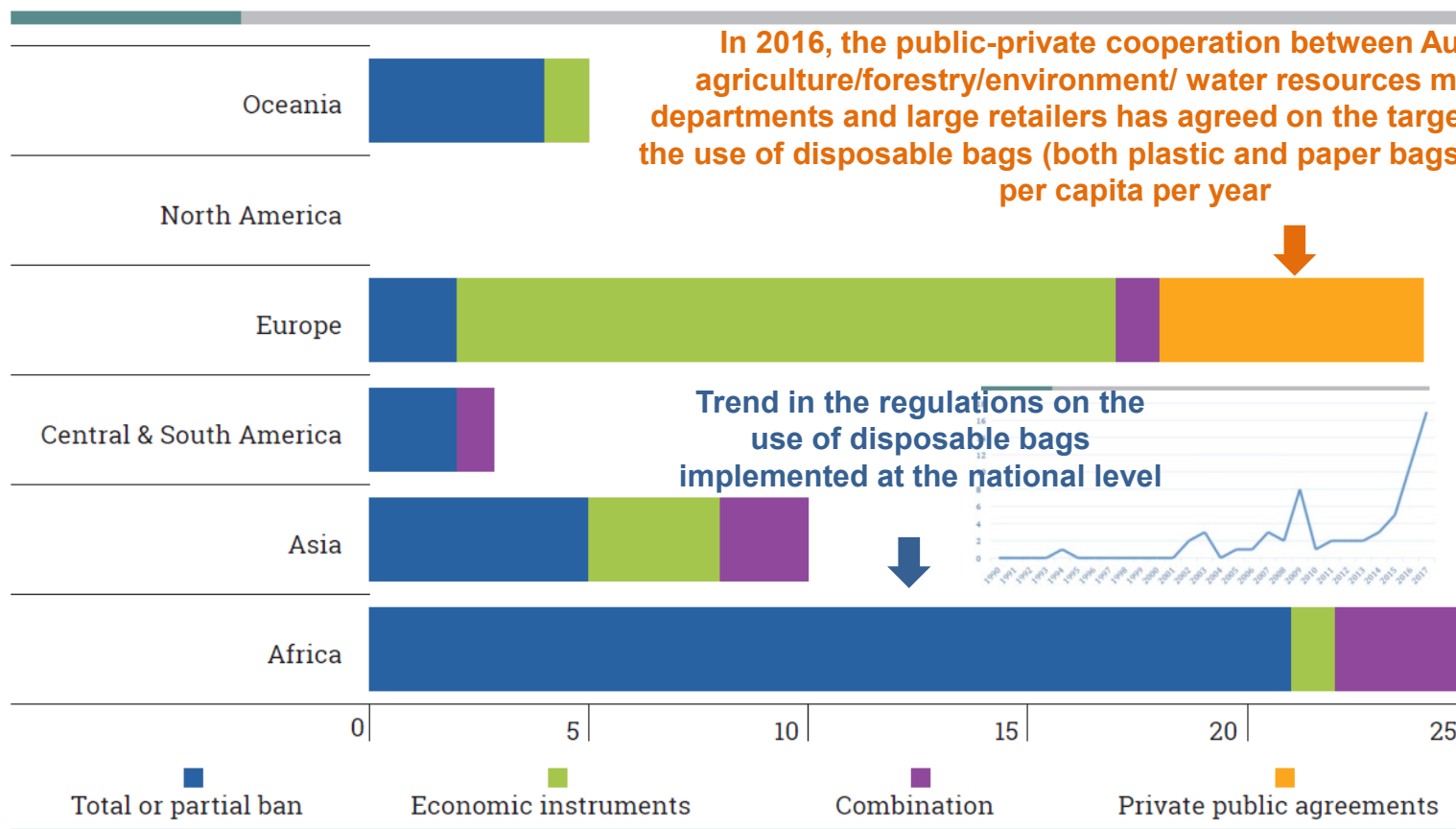


# 2. Plastics Management Regulations



## Global Regulations on Plastics

- Policy measures for managing/reducing plastic packaging materials (plastic bags and foamed polystyrene containers) include **regulations (prohibition of use)**, **economic means (fees imposed on supplier/seller/consumer)**, **policies combining regulatory and economic means**, and **public-private cooperation (voluntary participation of industries in formal agreements)**.



# 2. Plastics Management Regulations



## Korea's Plastic Waste-related Regulations: Effects and Strategies for Improvement

- The domestic plastic waste system covered in this study covers **economic measures** (waste disposal fee system, extended producer responsibility for recycling), **public-private cooperation** (circular utilization evaluation system, packaging material classification system), **prohibition of use** (regulations on the usage of disposable cups, measures for preventing over-packaging)

Regulations	Reduction Effect	Recycling Effect	Economic Effect	Strategies for Improvement
Waste disposal fee system	-	⊙	○	Voluntary agreements and transition to EPR expected to bring additional effects on promoting recycling
Extended producer responsibility for recycling	-	⊙	○	Expand items and build foundation for recycling
Circular utilization evaluation system	⊙	⊙	○	Implementation of recommendations and continuous improvements
Packaging material classification system	⊙	⊙	○	Continuous monitoring of existing and new barriers to waste recycling following the implementation of improvements
Regulations on the usage of disposable cups	⊙	○	△	Customized measures such as charging fee or deposit for using disposable cups
Regulations on the usage of vinyl bags	⊙	○	△	Continuous development of alternative materials/products and methods
Measures for preventing overpackaging	⊙	○	△	Evaluation of on-site applicability and implementation of legal regulations

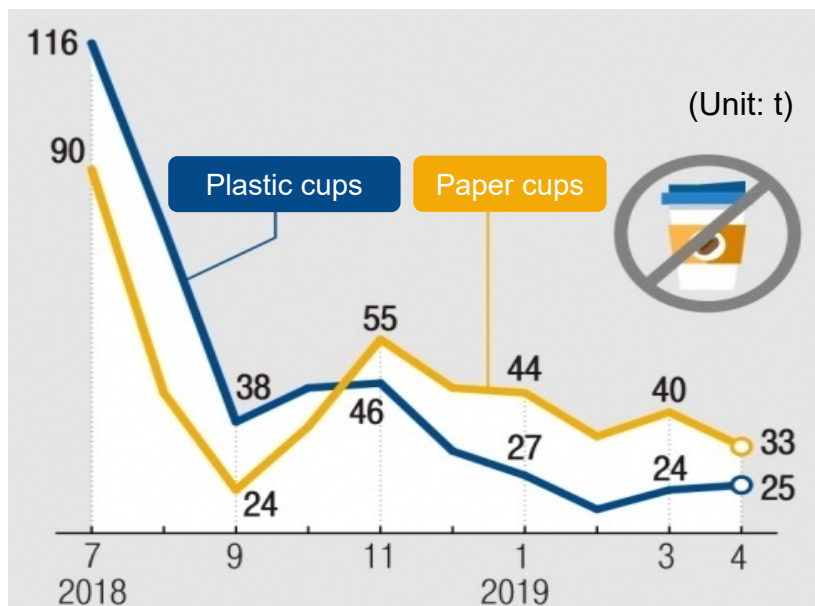








# 2. Plastics Management Regulations



## Comprehensive Measures for Recycling Waste Management (Aug. 5, 2018.)

- **Voluntary agreement on prohibiting the usage of disposable cups within store** with 21 brands (16 coffeehouse chains and 5 fast food chains)
- Amount of waste disposable cups collected **decreased 72%** from 206t in July 2018 to 58t in April 2019
- 100-400 won discount provided to customers who bring their own reusable cups; yearly total of 1,020,000 customers received discounts amounting to 2.94 billion won



	Plastic waste generation	At present	→	Planned <b>Reduce to half</b> (By 2030)
	Plastic waste recycling	34%	→	<b>70%</b> (By 2030)
	Colored PET bottle usage	36.5%	→	<b>0%</b> (By 2020)
	Use of environmentally harmful materials (e.g., PVC)		→	<b>0%</b> (By 2030)
	EPR for recycling vinyl bags, etc.	66.6%	→	<b>90%</b> (By 2022)
	Use of disposable cups (coffee shops)	<b>6.1 Billion</b>	→	<b>4 Billion</b> (By 2022)
	Recycling of disposable cups (coffee shops)	8%	→	<b>50%</b> (By 2022)

# 2. Plastics Management Regulations



## Regulation on the Use of Disposable Plastic Bags

- **Prohibition of the use of plastic bags at large and medium-sized (165m<sup>2</sup> and above) supermarkets (enforced from 1 April 2019)**
- ✓ The Enforcement Regulations of the Resource Recycling Act amended on 1 January 2019 to impose a fine of up to 3 million won for violations
- ✓ **70% reduction in the use of plastic bags** used for packing produce and meats at supermarkets such as E-Mart and Lotte Mart
- **Prohibition of handing out free plastic bags at bakery (enforced from 1 January 2019)**
- ✓ **More than 84% reduction** from 90.6 million bags (Jan-May 2018) to 14.8 million bags (Jan-May 2019)

### <Regulations on the use of disposable plastic bags and shopping bags>

(Applicable to supermarket chains, department stores, shopping complexes, and supermarkets larger than 165m<sup>2</sup>)

Type	Available for Use	Details
General plastic bag	X	
Roll plastic bags	△	Can use only for packing fish, meats, ice creams, unpackaged fruits and vegetables
Vinyl-coated shopping bags	△	Only those which are coated with recyclable coating material
Paper shopping bags, Biodegradable plastic bags	○	100% paper or eco-label certified products
Ultra-small/Extra-large vinyl bags and shopping bags	○	Under 0.5L in volume (under B5 size) or over 50L volume

Source: Ministry of Environment



**Max. penalty of 3 million Korean won for providing plastic bags**

### <Stronger regulations on using disposable plastic bags>

Type	Target of regulation	Past	Now
Supermarket chains	Disposable bags and shopping bags (Excluding paper bags and bags used for wet products)	No free provision	Prohibition
Supermarkets larger than 165 m <sup>2</sup>		None	No free provision
Bakeries			

Source: Ministry of Environment



# III. Waste Management to Reduce Waste Leakage into the Marine Environment



<http://blog.naver.com/PostView.nhn?blogId=kajoklove&logNo=221574411122>



<http://blog.naver.com/PostView.nhn?blogId=kreamof&logNo=221550365618>



<http://blog.naver.com/PostView.nhn?blogId=kreamof&logNo=221550365618>

# 1. Status of Marine Plastic Waste in Korea



## Status and Problem of Plastic Marine Debris

- **(Generation)** The annual amount of **plastic marine debris** generated in Korea is estimated at **6.7 million tons (2018)**
  - **Marine debris from marine activities** (including those from foreign sources): **40,000 tons (60%), of which 36,000 tons (5.3%) are waste fishing equipment and buoys**
  - **Marine debris leaked from land:** **27,000 tons (40%), of which 20,000 tons flow into the ocean from rivers**
  - **As of 2018, marine debris from foreign sources accounts for about 2% of beach litter (96% from China)**
- **(Removal/Collection)** Central and local governments fund the removal of **61,000 ton/year of marine debris (2018)**, and the **cost for removing** one ton of marine debris is **1,249 USD\***
  - **Remaining/existing marine debris as of 2018** [ $\Sigma$  (generation-collection)] is estimated at **118,000 tons**
  - **Central government:** Employs ships to collect marine debris **at ports (22 ships), national fish basins (12 ships), and the EEZ (44.2 million USD\* in 2018, commissioned to the Korea Marine Environment Management Corporation, Korea Fisheries and Port Agency, etc.)**
  - **Local governments:** Mostly **employs manpower** to collect beach litter (subsidized) (**32 million USD\*** in 2018, local governments in coastal areas (**83 in total**, of which 11 are regional **local governments** and 72 are basic local governments) have **11 clean-up ships**)



# 1. Status of Marine Plastic Waste in Korea



## Status and Problem of Plastic Marine Debris

- **(Treatment/Recycling)** **Collected marine debris** is consigned to waste treatment companies in accordance with **the Waste Management Act** in the same way **as land waste**.
  - **Treatment:** **Most are incinerated or landfilled**, and the **recycling rate** is less than **10%**; waste treatment companies tend to avoid treating marine debris due to concerns that the salinity and foreign substances in the waste may cause problems in the treatment facility, etc.
  - **Recycling:** The **producer responsibility for recycling marine plastics** are lower (**29% for aquaculture buoys**) than that for **recycling land products** (e.g., **80% for PET bottles**), and there is also **limited demand** for recycled products.
- **(Problem)** The **amount of collected is less than the amount generated**, so plastic waste continues to **accumulate in the ocean**.
  - **Blind spots:** The **debris on shores, which are accessible**, are being relatively **well removed**, but removal of debris in less accessible areas such as **islands and sea beds** are proving to be difficult.
  - **Collection system:** **Low efficiency** due to using **traditional collection methods (detection by eyesight)** and the lack of information on marine debris locations; mostly collected through **government-led programs** with **low participation from the private sector/general public**
  - **Local government conditions:** Due to **lack of budget and equipment**, gaps occur in marine debris collection in **local jurisdictions**; also, **military and marine leisure zones** are collection **'blind spots'**

# 2. Comprehensive Plan for Marine Plastics Reduction in Korea



## Comprehensive Plan for Marine Plastics Reduction (May 29, 2019)

- To create a clean and safe ocean free of plastics, the Comprehensive Plan for Marine Plastics Reduction was established, which includes **the measures to manage the entire lifecycle of marine plastics** from their generation to collection, and treatment.
- Aims to **reduce marine plastics by 30% by 2022 and 50% by 2030 compared to 2018**

### Vision

**Safe and Clean Ocean Free of Plastics**

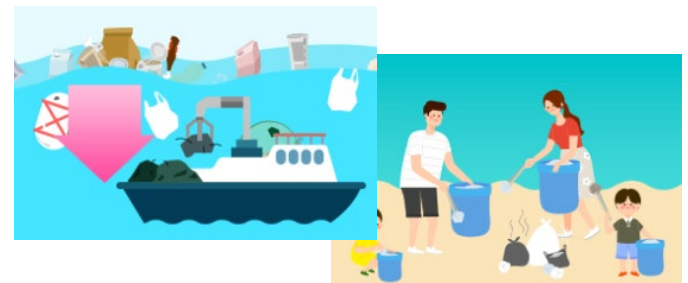


### Goal

**Reduce marine plastics by 50% by 2030 (as of 2018, 118,000 tons exist, aims for 30% reduction by 2022)**

### Strategy

- **Manage full lifecycle of marine plastics from generation to collection and treatment**
- **Improve marine plastics management system and expand participation of the general public**



# 2. Comprehensive Plan for Marine Plastics Reduction in Korea



## Comprehensive Plan for Marine Plastics Reduction (May 29, 2019)

- Through twelve action plans in four major areas, realize the reduction of marine debris generation, increase in the volume of marine debris collection, recycling of recycling of marine plastics, enactment of marine waste management laws, and significant expansion of public participation

Reduce generation from **67,000 tons (2018) to 56,000 tons (2022)** by management of **waste fishing equipment/buoys and waste from rivers**, which account for 54% and 31% of all marine plastics, respectively

Reduction measures by source

- Reduce waste from marine activities
- Block waste from leaking into the ocean
- Respond to marine debris from foreign sources

Expand collection from **61,000 tons (2018) to 79,000 tons (2022)** by **allocating more budget and equipment**

Improve marine plastics collection/transportation system

- Address collection blind spots
- Increase efficiency of collection system
- Establish collection system engaging local participation

Realize **zero desertion of marine plastics** by building an **efficient collection and treatment system**  
Promote **marine plastics recycling to the level of developed countries** such as Germany and the US

Promote treatment/recycling of marine plastics

- Expand infrastructure for treatment and strengthen management
- Create foundation for better recycling

**Establish a marine waste management law** which can lead **international standards**  
**Minimize public concerns over microplastics** in the ocean through proactive measures  
Organize campaigns/collection events and **expand public participation**

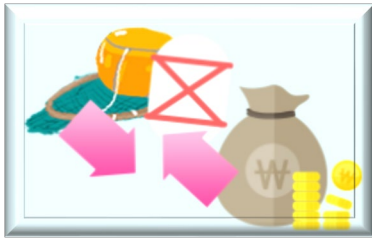
Improve legal basis for management and public awareness

- Establish legal basis
- Establish foundation for marine microplastics management
- Expand public participation
- Strengthen customized education programs

# 2. Comprehensive Plan for Marine Plastics Reduction in Korea



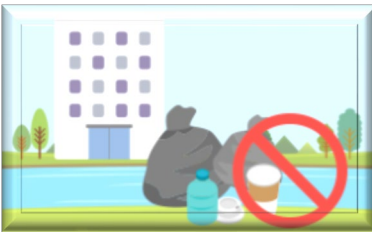
## Reduction measures by source (May 29, 2019)



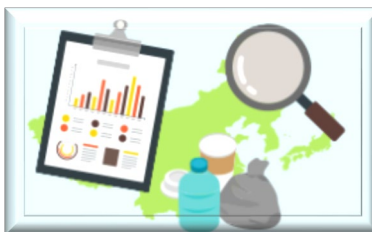
- **(Collection of waste fishing equipment and buoys)** Induce voluntary collection by fishermen through a **Fishing Equipment and Buoy Deposit** similar to the deposit for used bottles (from 2021)
  - **Deposit returned** upon collection of waste fishing equipment and buoys at designated centers (Feasibility review in 2019 → Establish legal basis and system in 2020 → Enactment in 2021)



- **(Eco-friendly buoys)** Expand use of **eco-friendly buoys** instead of Styrofoam buoys which disintegrate into microplastics in a short time (Supply rate: 23.6% in 2018 → 50% in 2022)
  - **Central and local government to subsidize** exchange of Styrofoam buoys to eco-friendly ones (Subsidy rate: Central/Local/Personal = 35%/35%/30%, Central government subsidy = 35 million USD in 2019), review possible prohibition of the production/use of Styrofoam buoys or charging fees once reaching supply target in 2022



- **(Reduce waste inflow from rivers)** Management of **marine inflows of plastic waste** not only by the marine coast management administrative offices but also the **river management administrative offices**
  - Build **inflow prevention facilities** to inflow from river streams (Marine Litter and Contaminated Sediment Management Act, under review by the National Assembly), improve performance of **inflow prevention devices during floods** (R&D, from 2012) and review installation of 6 additional devices



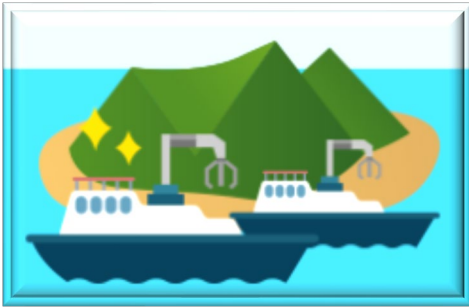
- **(Joint investigation, research and response)** Cooperation with neighboring countries through regional organizations (NOWPAP, etc.) and bilateral councils, and creation of a joint response team of relevant organizations (2019)
  - **Request source country to cooperate on preventing inflow, while also finding measures to prevent waste inflow from Korea to foreign waters; Create joint response team** of the Ministry of Oceans and Fisheries, Korea Marine Environment Management Corporation, Korea Maritime Institute, Korea Institute of Ocean Science and Technology, etc.



# 2. Comprehensive Plan for Marine Plastics Reduction in Korea



## Improve marine plastics collection/transportation system (May 29, 2019)



- (Collection centers and clean-up vessels at isles) **Build collection centers for marine litter** at isles where there is high possibility of marine re-inflow and **supply clean-up vessels and vehicles by region** (from 2020)
- (Large surface-cleaning ships and focused collection of sedimentary waste) **Collection of salvaged waste by fishermen** through cooperation with fishery coops; **focused collection of sedimentary waste** utilizing **large surface-cleaning ships** (5,000 ton dwt, built in 2018~2022) supported by larger budget allocation (173 million USD in 2019)



- (Voluntary collection of waste fishing equipment by fishermen) Suspension of fisheries for a set period (e.g., during the off season) for **intensive collection of waste fishing equipment** (pilot project in 2019, Geoje) and review increasing total allowable catch (TAC) for high participation
- (Enhance local collection capacity) Encourage local governments to increase budget, **increase central government subsidy rate** (currently 30% or 50%), provide **support for securing cleanup vessels and equipment**



- (Smart monitoring) **Develop marine plastic distribution map** by analyzing ship routes, fishery basins, ocean current characteristics, etc. (R&D from 2020) and utilize in marine litter collection
  - Revise current **visual monitoring system** using vessels to an **ICT-based monitoring system** using satellites, drones (6 units at 6 ports in 2018 → 15 units at 12 ports in 2019), etc.
- (Introduction of high-efficiency equipment) Develop beach microplastic removal equipment and **vacuum suction collection equipment** to complement existing manpower-centered collection (R&D from 2020)

# 2. Comprehensive Plan for Marine Plastics Reduction in Korea



## Promote treatment/recycling of marine plastics (May 29, 2019)



- **(Regional pretreatment facilities)** Establish marine waste pretreatment facilities for **removing salt and foreign substances** for the smooth treatment of marine plastics
- **(More recycling facilities)** **Supply more waste styrofoam compressors** for the recycling of waste styrofoam buoys generated in aquaculture farms (27 units operating as of 2018)
- **(R&D)** **Develop technology for effective recycling** of marine plastics, e.g., special pretreatment for removing salt/mud, extraction of spun threads from waste fishing nets, etc. (R&D from 2020)







- **(Stronger producer responsibility, e.g., for aquaculture buoys)** **Incrementally increase the mandatory recycling rate for EPR\* products** such as aquaculture buoys (currently 29%) (MoE)

\* A legislation that obligates producers (manufacturers and importers) to collect and recycle waste from the products they produce

- **(Expand demand for recycled plastic products)** **Promote the purchase of recycled plastic products** by local governments and public institutions and promote excellent products to consumers

- Promote private sector product development and attract public attention through **Up-cycling** contests and exhibitions

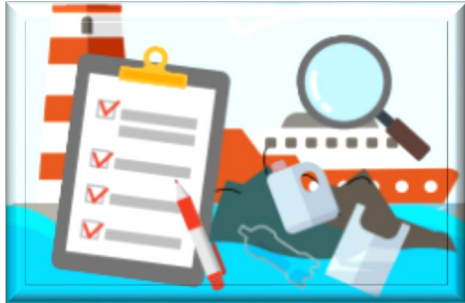


Kook(Korea)	Adidas(Germany)	Cape Porpoise(US)	Lush(UK)
			
Netbag made using recycled fishing nets	Shoes made with marine plastic litter	Door mats made with crab fishing ropes	Cosmetic bottles made with marine plastic litter

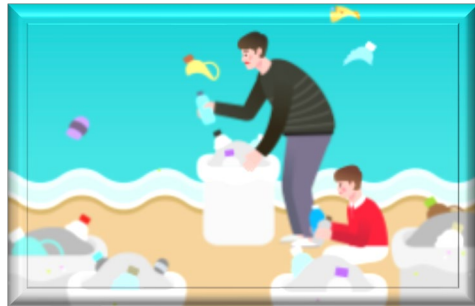
# 2. Comprehensive Plan for Marine Plastics Reduction in Korea



## Improve legal basis for management and public awareness (May 29, 2019)



- **(Marine Waste Act legislation)** Enactment of the **Marine Waste and Contaminated Sediment Management Act** to provide basis for the prevention and efficient collection of marine litter (under review by the National Assembly)
- **(Draft standard ordinance)** Establish and disseminate **draft standard ordinance for marine waste management including marine plastics** for their systematic management and response of local governments (from 2020)



- **(Foundation for marine microplastics management)** Periodically examine **the distribution of microplastics** in the coastal areas and build time series data by region (pilot survey in 2019 / main survey from 2020)
- **(Campaigns engaging public participation)** Launch the **“Zero Marine Plastics Campaign”** on National Ocean Day (May 31) and carried out massive marine litter collection events led together by the central and local governments, NGOs, and residents.



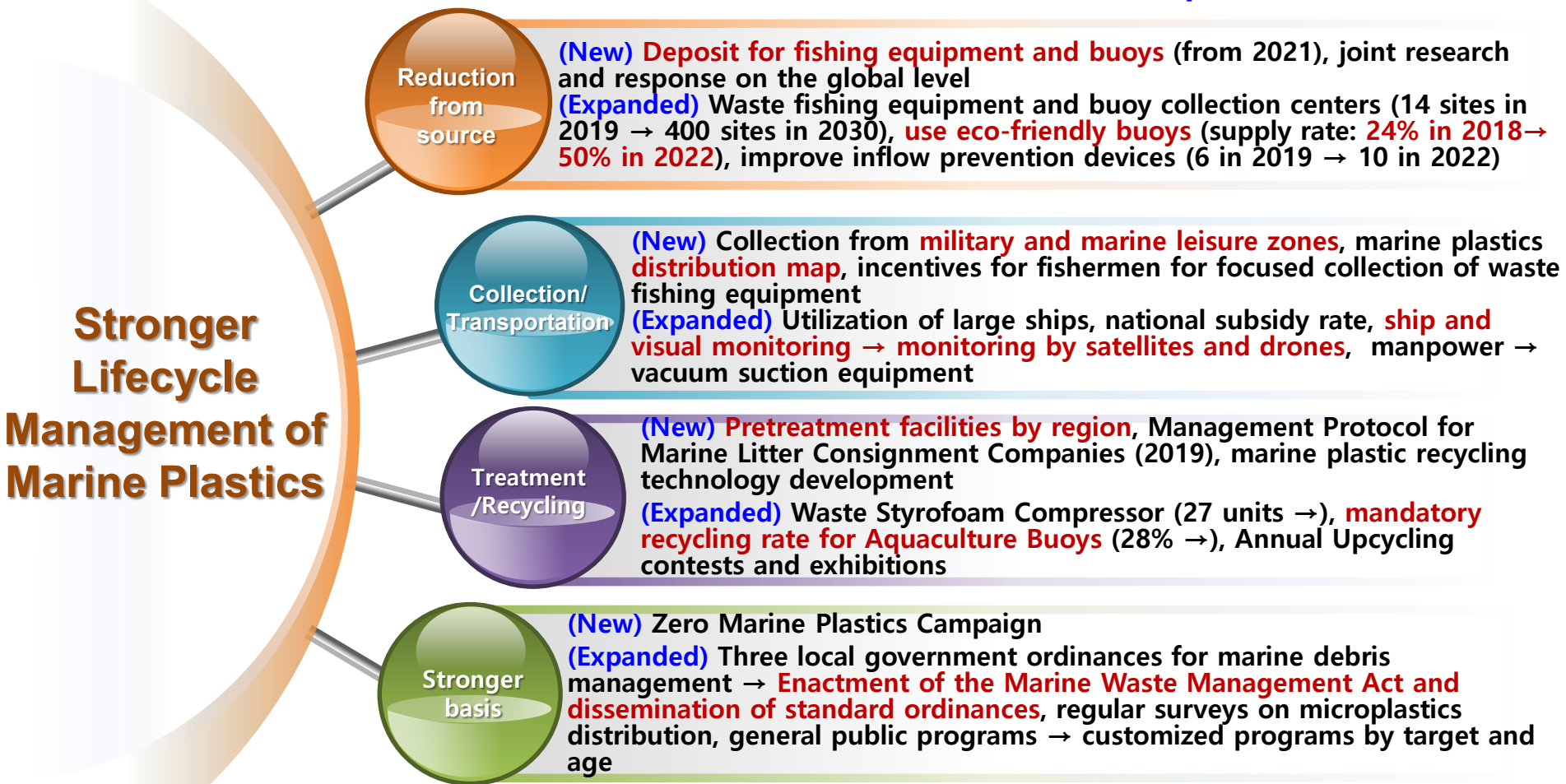
- **(Promote local projects)** Identify and disseminate various participatory programs, such as the **Adopt-a-Beach campaign**, to front-line municipalities (from 2019)
- **(Customized programs)** Create and disseminate **educational programs** customized according to target characteristics (fishermen, people who fish as a hobby, tourists, etc.) and age range (from 2020)

# 3. Full Lifecycle Measures for Marine Plastic Litter



## Comparison of the before-and-after of new and expanded measures

- Stronger management of the full lifecycle of marine plastics from **generation to collection and treatment** to create a **clean and safe ocean free of plastics**





# THANK YOU

(sryj@kei.re.kr)



Korea  
Environment  
Institute

Copyright © asadel.com All rights reserved

# NOWPAP-TEMM Joint Workshop on Marine Litter Management



*Improve waste management  
to address marine litter in  
the Russian Federation*

Presented by  
MI FP of Russia  
Ph.D. SERGEY  
MONINETS

September 2019. Dalian. China

# The main results of year of ecology (2017)

## WASTE MANAGEMENT

The reform of the treatment of domestic waste get a new motion. Important amendments to federal and local laws are Developed. Here are the Stages of reform.

1. Preparation and coordination of territorial schemes of waste management in each region of the country
  2. Selection of regional operators who will be responsible for the entire waste management cycle
  3. Setting a single tariff for the region's waste management service
  4. Creation of modern high-tech complexes for waste management in the regions
- In parallel with these measures, a gradual introduction of separate garbage collection in the regions is planned.

The progress of the reform is not going as fast as planned in its development.

СИСТЕМА УЧЕТА  
ВЫВОЗА  
МУСОРА

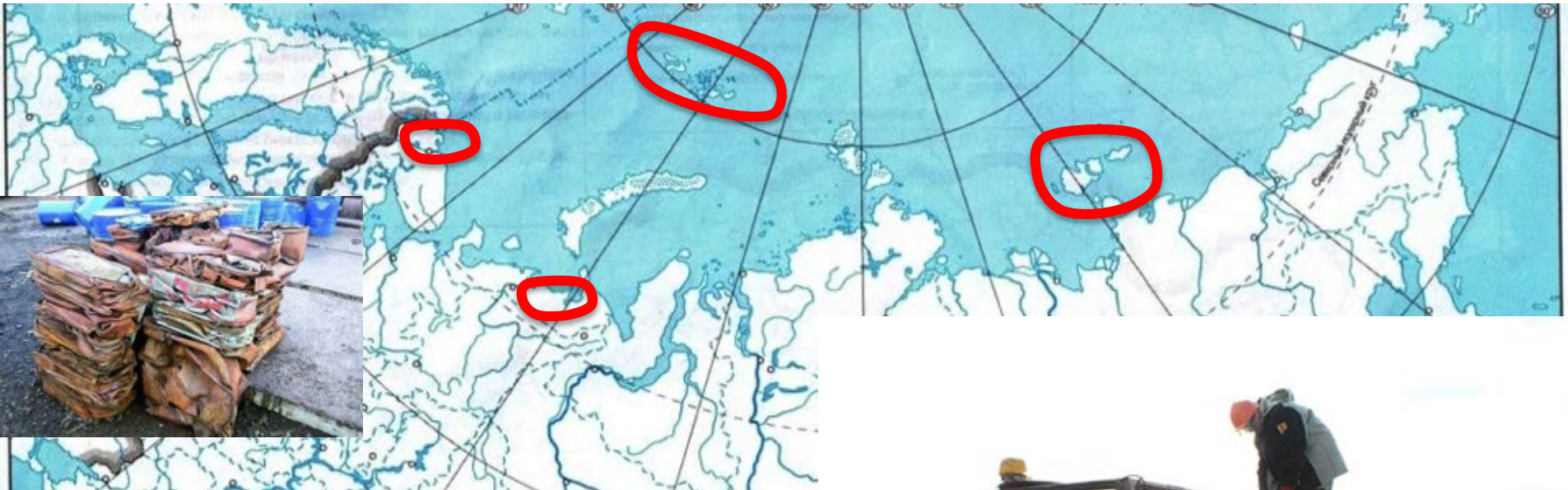
Автоматизация управления  
мусора

Профессиональные программы  
для учета мусора





# “General cleaning” in the Arctic





# President's Decree and National Projects



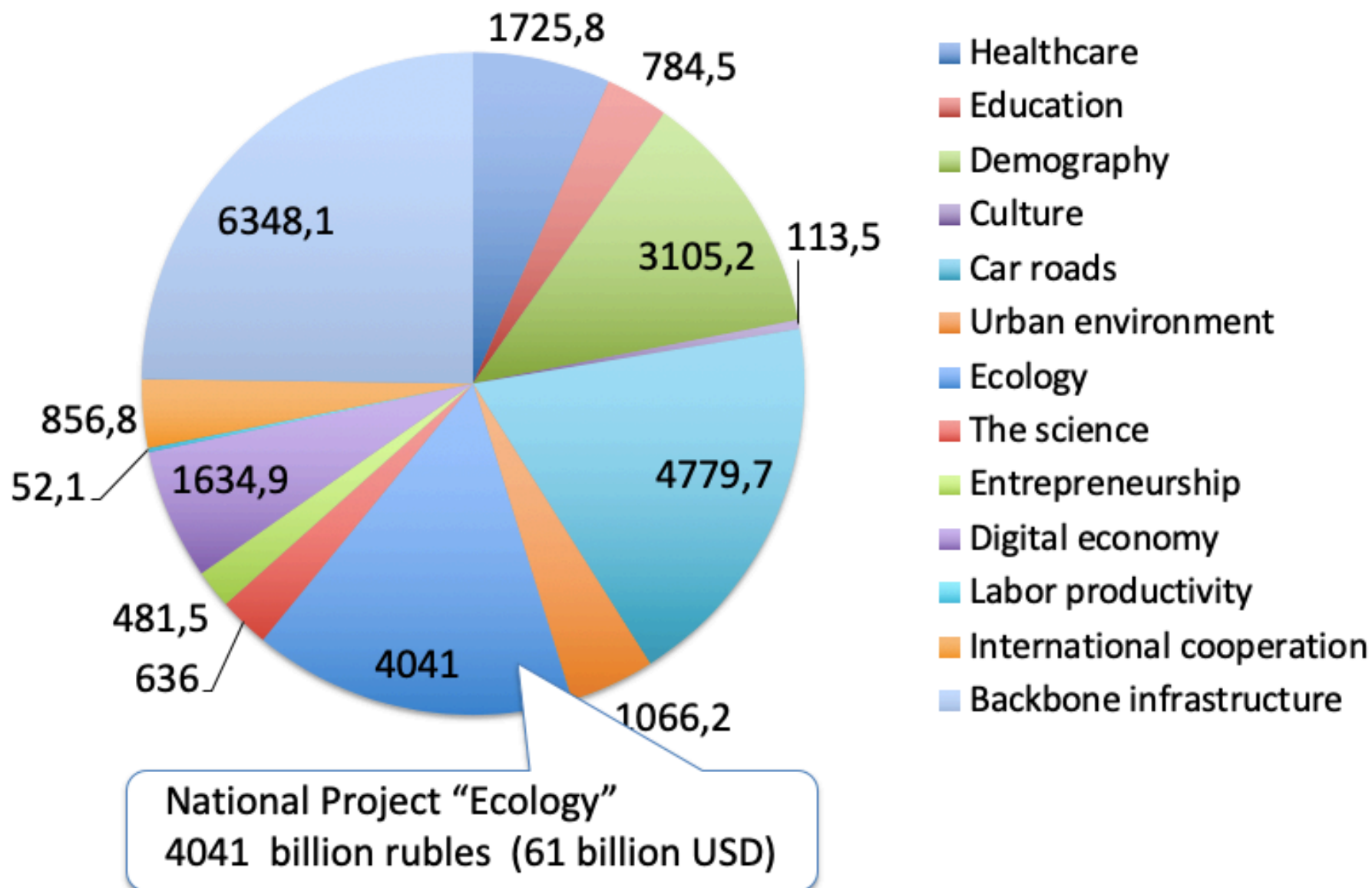
On May 7, 2018, President of Russia V.V. Putin signed a decree “On National Goals and Strategic Tasks of the Development of the Russian Federation for the Period until 2024”, which establishes and approves national projects of Russia

At the end of 2018, these projects were formulated. One of the most important national projects became the Ecology project. The total amount of project financing from the federal budget is more than 60 billion US dollars.

Prime Minister D. Medvedev was appointed responsible for their implementation



# Budget of National Projects Until 2024



# National Project “Ecology”



Pure country  
Billion USD **1,16 + 0,75**



Integrated Solid Waste  
Billion USD **1,66 + 0,1 + 2,8**



Infrastructure for hazard waste management  
Billion USD **0,27 + 0,0 + 0,28**



Fresh air  
Billion USD **1,57 + 0,25 + 5,87**



Pure water  
Billion USD **2,26 + 0,2 + 1,31**



Improvement of the Volga  
Billion USD **2,06 + 0,61 + 0,49**



Preservation of Lake Baikal  
Billion USD **0,45 + 0,07 + 0,003**



Preservation of unique water bodies  
Billion USD **0,2 + 0,03 + 0**



Biodiversity conservation  
Billion USD **0,1 + 0 + 0**



Forest conservation  
Billion USD **0,63 + 0,06 + 1,64**



Implementing the best available technology  
Billion USD **0,42 + 0 + 0**

Federal budget

Local budget

Extrabudgetary

# The main objectives of the project “Ecology”

Formation of an integrated system for the management of solid municipal waste, including:

- the elimination of landfills and the restoration of the territories in which they are located,
- the creation of conditions for the recycling of all production and consumption waste prohibited for burial.

Creation and effective functioning a system of public control aimed at identifying and eliminating unauthorized landfills.

The creation of a modern infrastructure that ensures the safe handling of waste of hazard classes I and II, and the elimination of the most dangerous objects of accumulated environmental damage.

Application by all facilities of an environmental regulatory system based on the use of the best available technologies.

Preservation of unique water bodies, including the implementation of measures for clearing coastal debris from, among others, the Amur River.



# Liquidation of unauthorized dumps



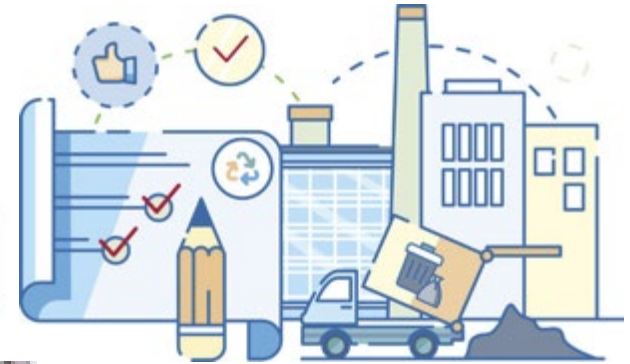
191 land plots on which unauthorized landfills were located within the boundaries of cities will be restored by the end of 2024.

# Infrastructure for hazard waste management



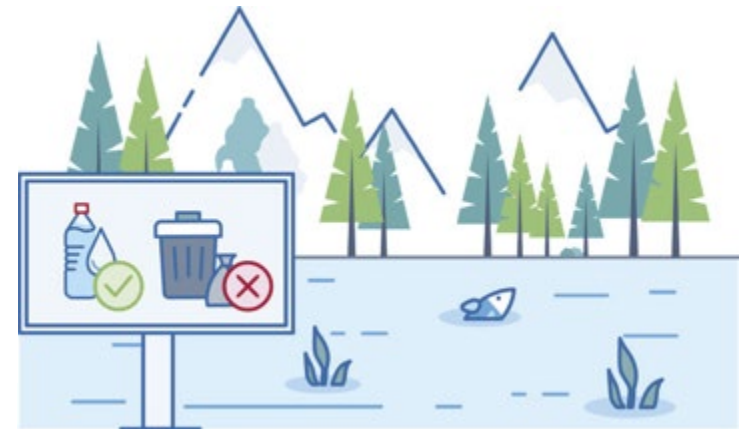
7 complexes for processing and disposal of hazardous waste will be committed to operation by the end of 2024

# Solid Waste Disposal



Increase in the share of solid municipal waste aimed for disposal

# Restoration of Water Bodies



23500 Ha of water bodies will be cleared till 2024



# River bank cleaning



9000 km of the coast of water bodies will be cleared of household garbage and wood trash with the involvement of volunteer movement by the end of 2024.

4.5 million people will be involved

# National project on the Far East of RF

Each region, on the basis of a national project, develops its environmental programs.

At the same time, each region chooses the highest priority areas taking into account the existing risks.

They establish a specific list of results that must be achieved by a certain date. This allows us to be optimistic about the prospects for the implementation of projects.





**Thank you!**

18 8 2006

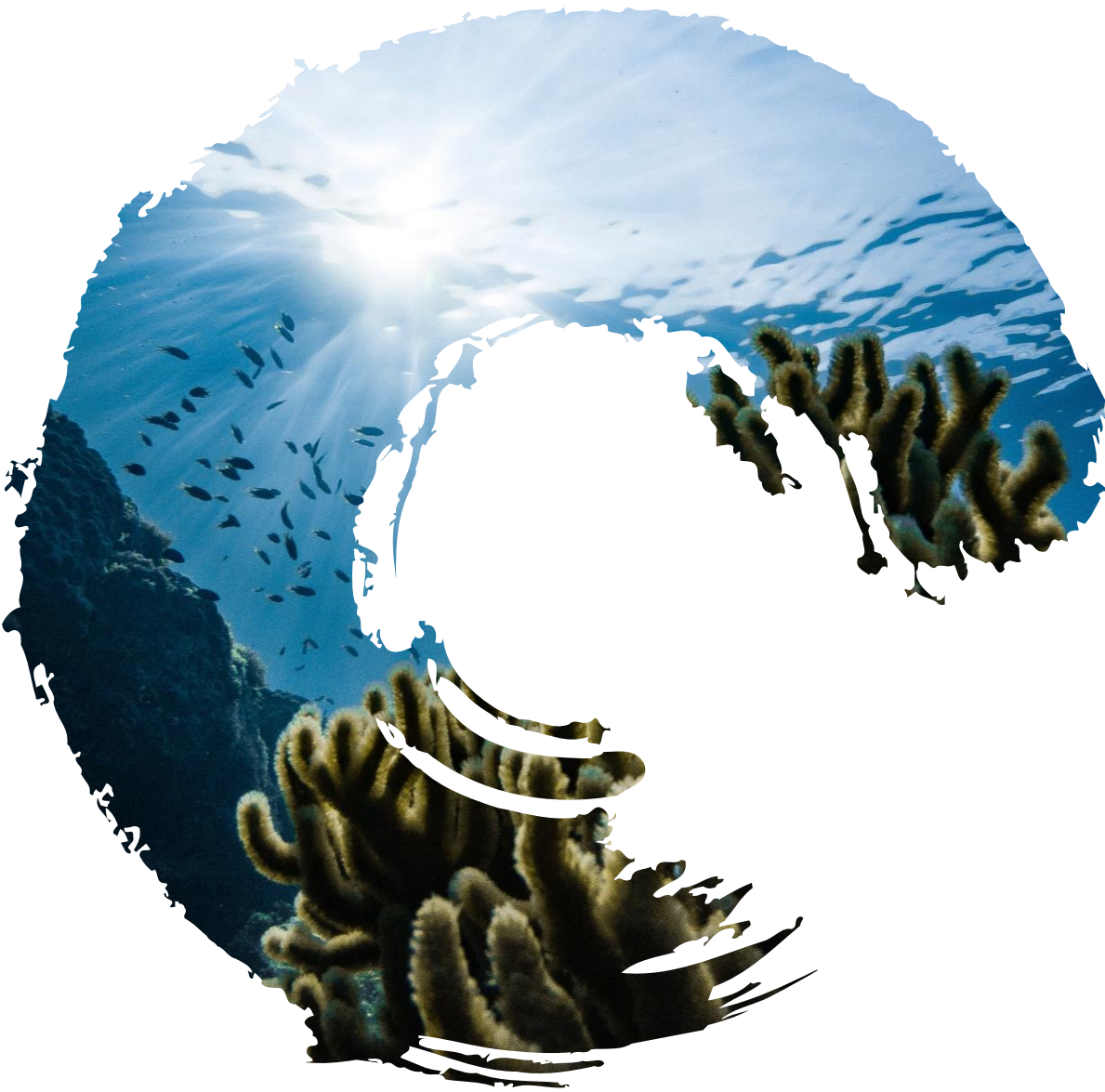




# UPDATE ON REGIONAL AND GLOBAL PROCESSES

**Global Programme of Action for the Protection of the  
Marine Environment from Land-based Activities**





# UNEA RESOLUTIONS ON MARINE LITTER AND MICROPLASTICS

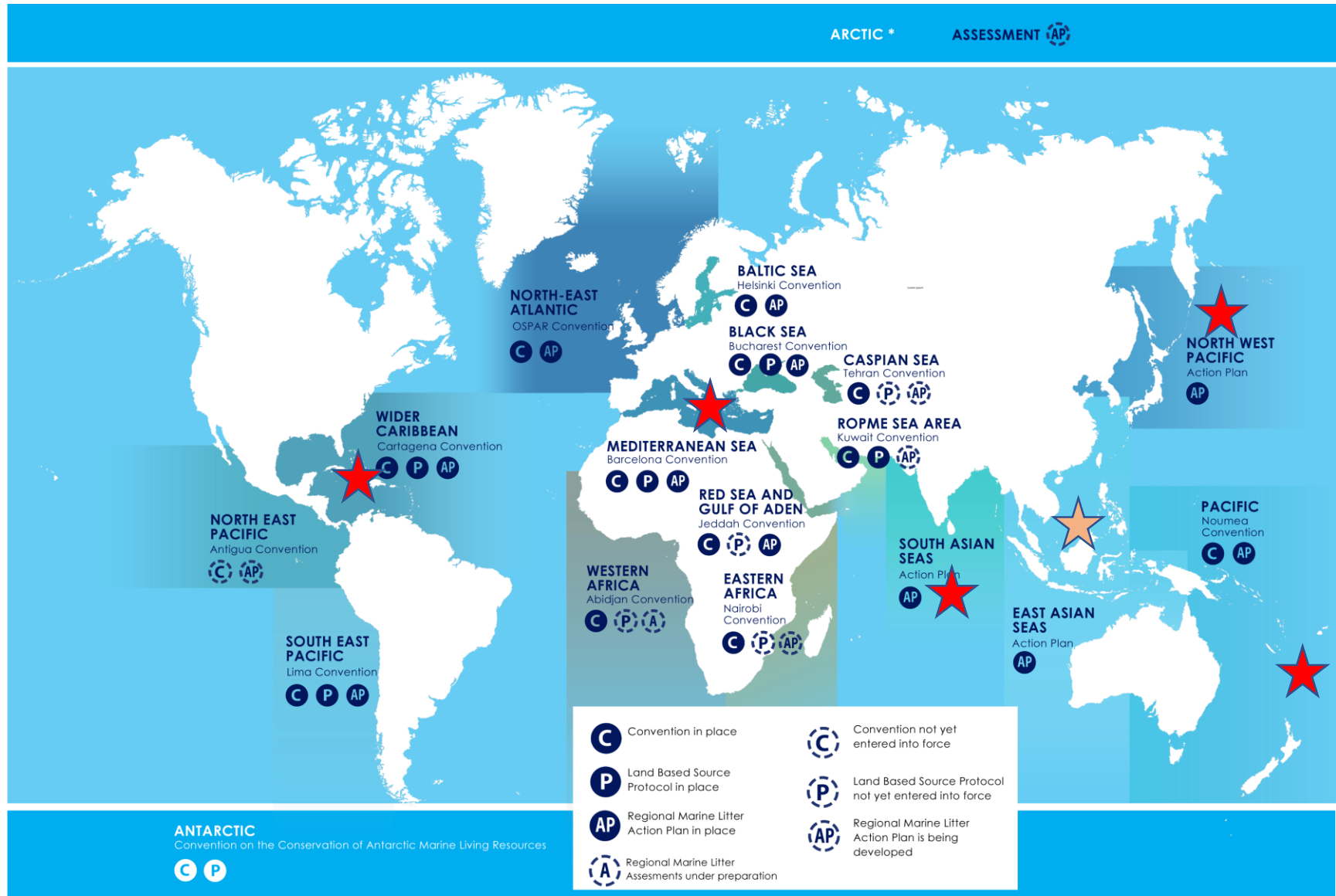
.....

Requested UNEP to provide support to the development of **marine litter action plans upon request by countries**

Called for greater collaboration and coordination through/with the **Global Partnership on Marine Litter**

(1/6, 2/11, 3/7)

# Regional Action Plans on Marine Litter (map is only indicative)



18 Regional Seas:

11 Regional Action Plans on Marine Litter

4 Draft Regional Action Plans (various stages)

1 Assessment underway → Action Plan in 2020 (Abidjan C.)

5-6 Regional nodes – Global Partnership on Marine Litter

Ongoing: National source inventories pilots to guide action plan development in Kenya & Seychelles

# National inventory approach

## National action plan

### National Inventory

Statistics on plastic production, imports, use and lifecycles (links to SDG 12.2.1 and 12.2.2)

Waste statistics (linked to SDG 11.6.1 and 12.5.1)

Monitoring of freshwater and wastewater (links to SDG 6.3.1 and 6.3.2)

Monitoring of coastal and marine waters (SDG 14.1.1)

Legislation and advocacy

Policy review

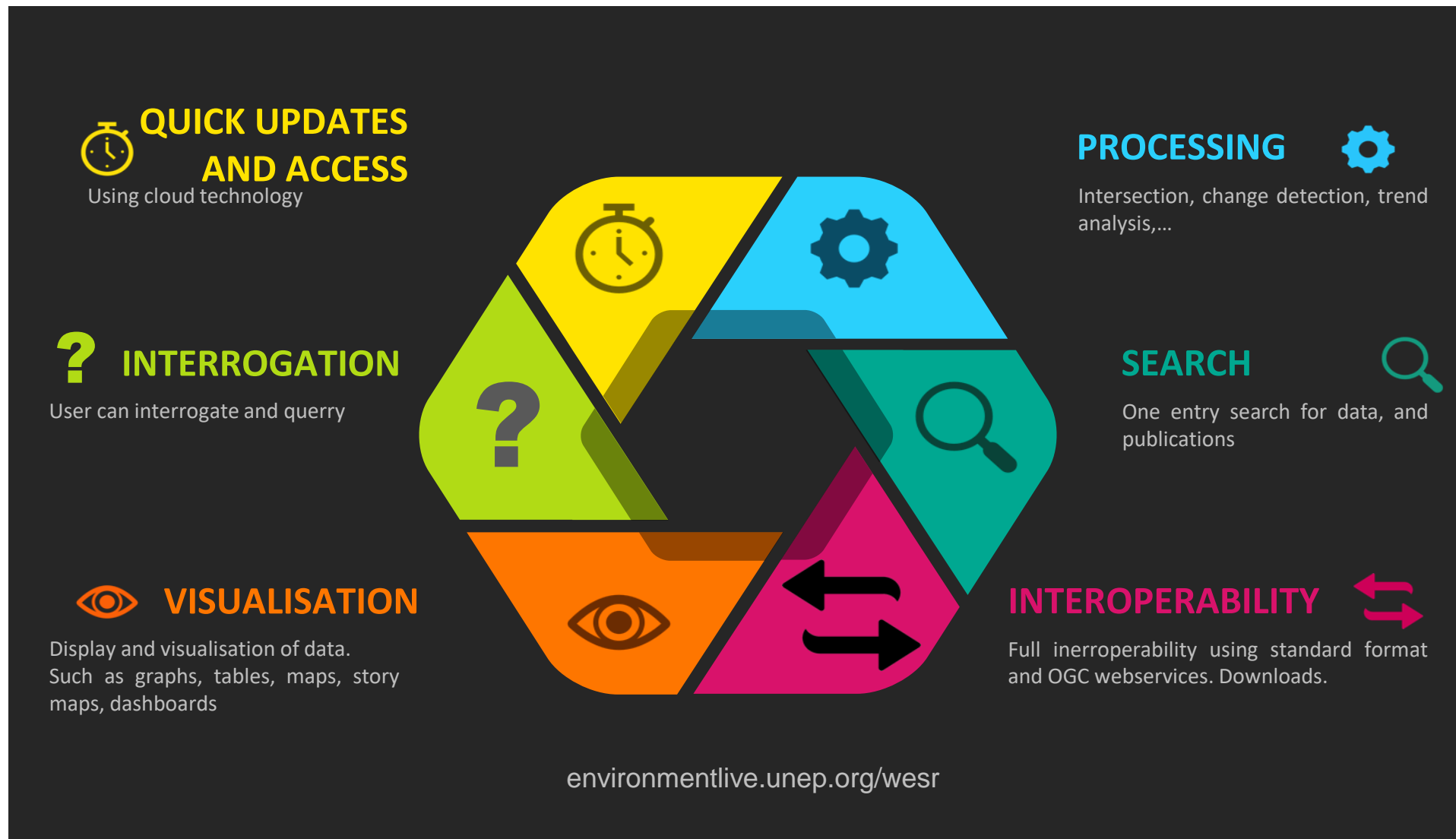
## OP 2. Strengthen scientific and technological knowledge

- |   |          |   |
|---|----------|---|
| <p><b>A</b> Convene science advisory initiatives</p>  | <p>➔</p> | <p>Listing ongoing for consultation</p>   |
| <p><b>B</b> Prepare an <b>assessment on sources, pathways, and hazards of ML &amp;MP</b> and its presence in the rivers and oceans, scientific knowledge about adverse effects on ecosystems, potential adverse effects on human health and environmentally sound technology innovations;</p> | <p>➔</p> | <p>Establishment of Scientific Advisory Committee – draft Assessment structure, TOR and invitations for nominations out<br/><b>Deadline 13 September 2019</b></p>                                   |
| <p><b>C</b> <b>Recommending indicators</b> to harmonize monitoring, report and assess methodologies</p>   | <p>➔</p> | <p>Approach being prepared</p>  |
| <p><b>D</b> <b>Gathering information to</b> form policies and action on environmentally sound technological innovations, options and measures for <b>reducing risks of discharge</b></p>  | <p>➔</p> | <p>Initiated: Technology and Innovation primer (linked to 7b) for discussion at AHEG 3</p> <p>Risk assessment work with GESAMP for hazards and risk management (policy brief under preparation)</p> |



## OP 3. Information management and coordination

Thematic entry point for marine litter including plastic litter and microplastics through the World Environment Situation Room's drawing on various UNEP initiatives. Features include:





# Ad hoc open-ended experts group – potential approach

## 1. STATE OF PLAY – FROM GAPS/BARRIERS TO SOLUTIONS

Stocktaking, inventories, review of methodology to assess effectiveness

18-22 November 2019, BKK

Solution workshop – Moving from gaps/barriers to solutions - how to overcome these in various predefined thematic tracks.

3rd meeting, Bangkok, Nov 2019



Output (TBD)

A catalogue of potential solutions to identified gaps/barriers. Identification of key elements to elaborate upon

## 2. HOW TO REALISE THE SOLUTIONS - ELEMENTS

Response workshop – explore the effectiveness of the identified solutions.

What does it take to realise the identified solutions – who and what is needed at global, regional and local level? How?

4th meeting, Latin America, May 2020



A catalogue of validated response options and ways to realise the identified solutions. Draft elements discussed and further developed.

## 3. MENU OF OPTIONS FOR FUTURE ACTION

Action workshop – refine and categorize the options for actions to realise the solutions. Finalize elements.

Based on effectiveness.

5th meeting, Africa, Oct 2020



A catalogue of global, regional and local action (and elements) assessed by their effectiveness to be presented to UNEA

UNEA, Nairobi  
Feb. 2021



Mapping of UN agency work

Inventory on standards and labels and gap analysis

Mapping of plastics flow

50 top point-sources Africa/Asia + technology needs assessment;

Riverine and freshwater monitoring & hotspots in accumulation zones

Insurance companies' role in marine litter reduction

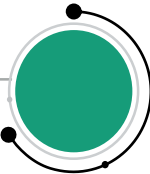


# CAPACITY BUILDING: ONLINE COURSES



2-week in all UN languages & Portuguese, Bahasa in 2019

**22,000 registered**



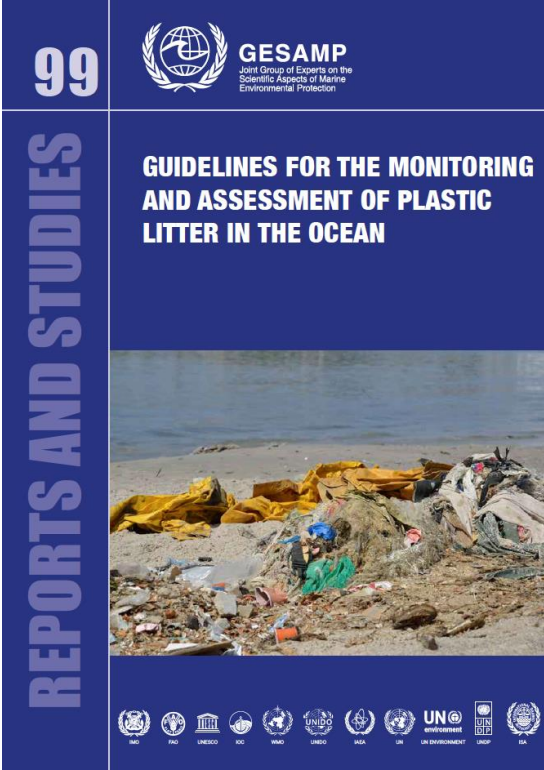
**LEADERSHIP TRACK:**  
5 hours of learning consist of 2 blocks

**EXPERT TRACK (English & Spanish):**  
32 additional hours consisting of 6 blocks some optional;

**Next:**

**Masterclass on “Addressing single-use and disposable plastics”**

# TRAINING OF TRAINERS



**Needs assessment**

**5-day course**

**Eastern Africa**

**East Asian Seas**

**Next: online theoretical component**

**Webinars**

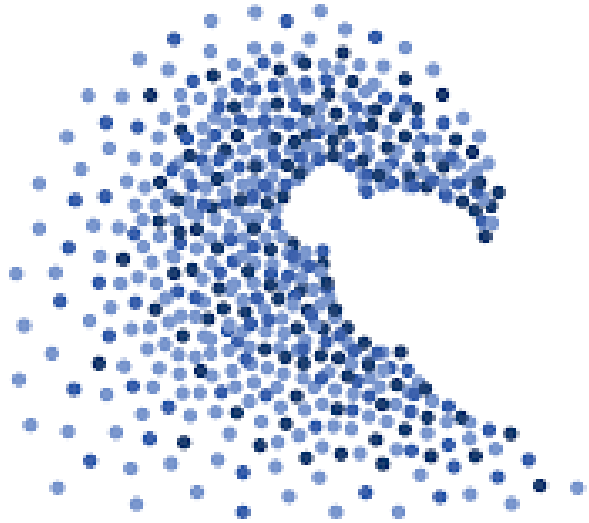
**More regions**



# GESAMP recommendations: compartments, litter size and policy concerns addressed

Feasibility	Compartments & plastic size			Chapter	Examples of policy concerns									
	Compartment	Sub-compartment	Plastic size		Distribution & Abundance	Source identification	Impacts							Policy relevance index
							Tourism	Seafood safety	Human health and injuries	Navigational hazards	Fisheries & aquaculture	Animal welfare	Biodiversity	
1	SL	BE	MA	4	R	R	R	?	R	?	?	?	R	5
2	SL	BE	ME	4	R	?	R	?	?	?	?	?	R	3
3	SF		MA	6	R	R	?	?	?	R	R	?	R	5
3	SF		MA	6	R	R	R	?	?	R	R	R	R	7
4	B	FISH	MEMI	7	R	?	?	R	?	?	R	R	R	5
4	B	INV	MEMI	7	R	?	?	R	?	?	R	R	R	5
5	B	SEAB <sup>c</sup>	MEMI	7	R	R	?	?	?	?	?	R	R	4
5	B	MEG <sup>c</sup>	MA MEMI	7	R	?	?	?	?	?	?	R	R	3
6	SS		MEMI	5	R	?	?	?	?	?	R	?	R	3
7	SS		MA	5	R	?	?	?	?	R	R	R	R	5

<sup>a</sup>



**clean  
seas**

**turn the tide  
on plastic**

**Improve plastics  
management (reduce,  
redesign, reuse, recycle)**

**Global phase out of non-  
recoverable plastics**  
(e.g. microplastics in cosmetics)

**Reduce single-use  
plastics drastically**  
Global ban on certain types of  
single-use plastic bags

**COUNTRIES: 60 and counting**

**UPCOMING AREAS OF FOCUS:**

**What's in your  
bathroom?**

**Tourism and Sports**

Drive change within the tourism  
industry as well as major  
events

**Artists and Athletes**

Engage key influencers in  
collaboration with e.g. the  
International Olympic Committee

**Disposable plastics**

Raise awareness about impact  
of plastics used more than  
once but with limited life-span

**Tide Turners Badge**

Engage youth in promoting  
change

# Unwrapping the risk of plastic pollution to the insurance industry

- A study on how the insurance industry can support the global agenda of tackling marine plastic litter and microplastics.
  - The study is aiming at identifying strategies and actions for the insurance industry to better manage plastic pollution risks in terms of risk assessment and analytics, risk reduction measures, insurance products, and investments; including the role of insurance regulators.
- **The costs of action versus the cost of non-action** for tackling the marine litter challenge.



## UNEP capital finder investor database:

- An interactive tool that allows entrepreneurs and project owners to identify sources of capital for their business or project. It focuses on alternative capital providers (non-bank and non-microfinance institutions). The funders are based around the world and will be included in the database as long as they fund projects in emerging markets.
- Feed data into a **country-level heatmap** that will showcase the number of funders per country of interest. These funder numbers will be able to be filtered by three parameters: capital type (grant, debt, equity), sub-sector (TBD), investor type (impact investors, VC, foundation, etc.).
- The heatmap will be used to identify macro-level data on alternative capital providers in countries around the world.

# JOIN US!

Thank you for your attention



[Cleanseas.org](https://cleanseas.org)

[www.gpmarinelitter.org](https://www.gpmarinelitter.org)





# International Environmental Technology Center

Keith Alverson, Director

---

**Plastic Pollution and Solutions**  
**NOWPAP-TEMM Joint Workshop on Marine Litter Management**  
**25 September, 2019**

---





*The International Environmental Technology Centre's vision is for countries to implement sustainable solutions to environmental challenges, with focus on holistic waste management.*

IETC assists countries to identify and implement **sustainable technological solutions** to **environmental challenges**

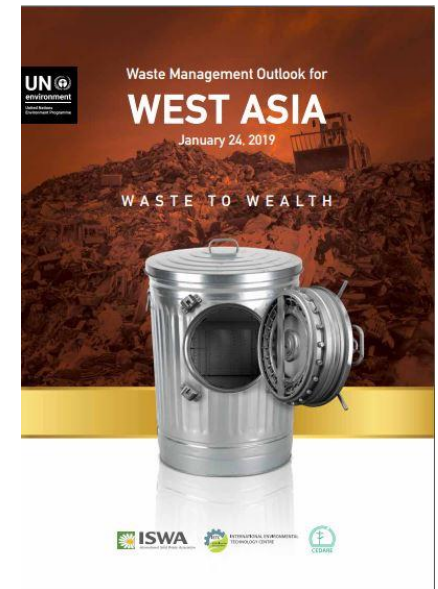
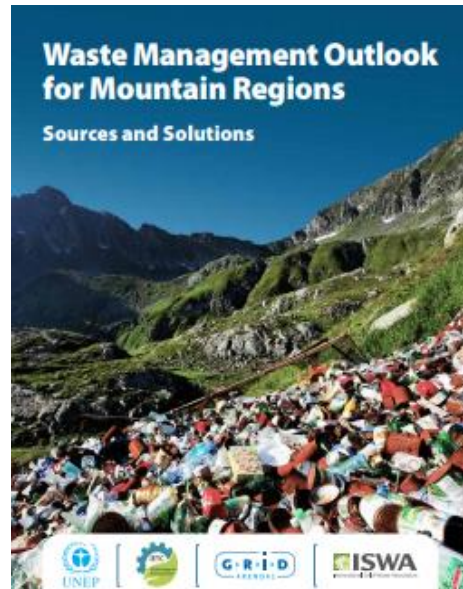
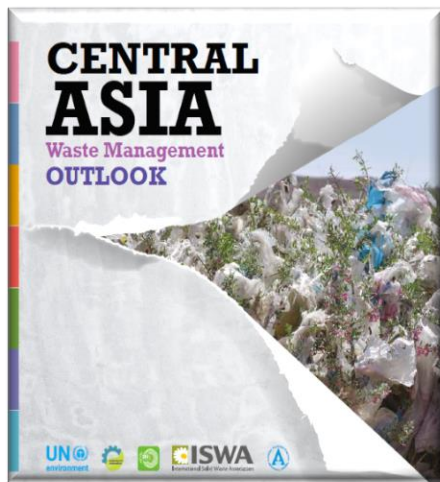
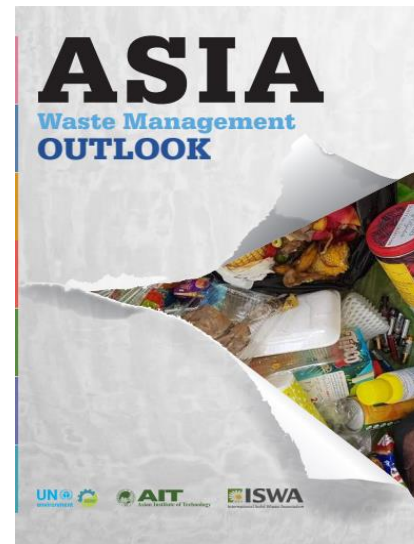
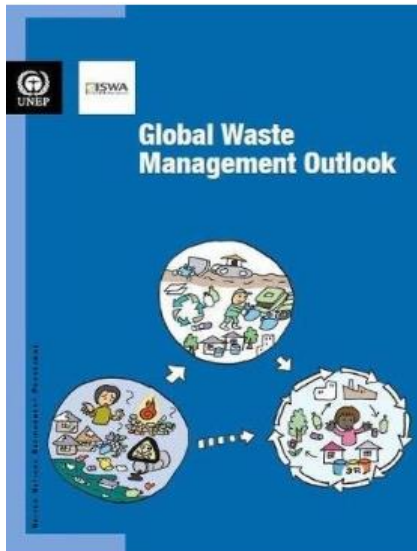
UNEP (2019) IETC Annual Report 2018

[www.unenvironment.org/ietc/report/ietc-annual-report-2018](http://www.unenvironment.org/ietc/report/ietc-annual-report-2018)



# Waste management Outlooks

## Global, Regional and Thematic





# UNEA 4 Resolutions (3/2019)

**UNEP/EA.4/Res. 6 Marine plastic litter and microplastics**

**UNEP/EA.4/Res. 7 Environmentally sound management of waste**

**UNEP/EA.4/Res. 8 Sound management of chemicals and waste**

**UNEP/EA.4/Res. 9 Addressing single-use plastic products pollution**





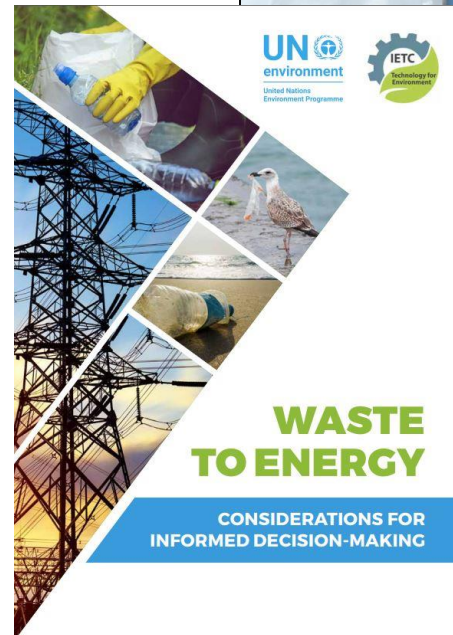
# This Presentation Draws on 2 Recent IETC Publications:

- Single Use Plastics: A Roadmap for Sustainability, 2018
- Waste to Energy: Considerations for Informed Decision Making, 2019

[www.unep.org/publications/](http://www.unep.org/publications/)

## Three keywords to remember:

- Banning (is it a solution?)
- Burning (is it a solution?)
- Monitoring (the only way to know!)



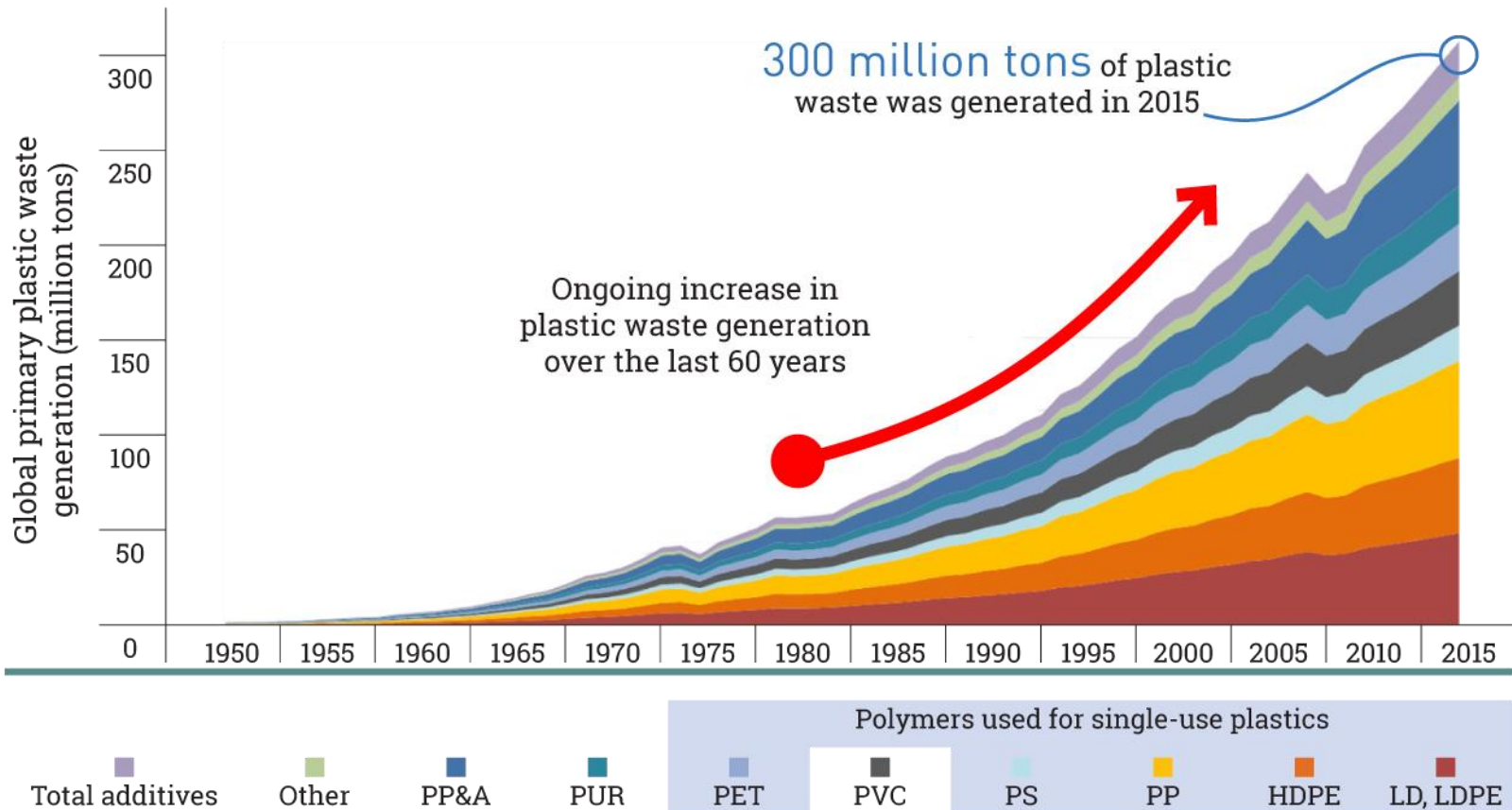
# UNEP (2018) Single-Use Plastics: A Roadmap for Sustainability





# The Plastic Challenge

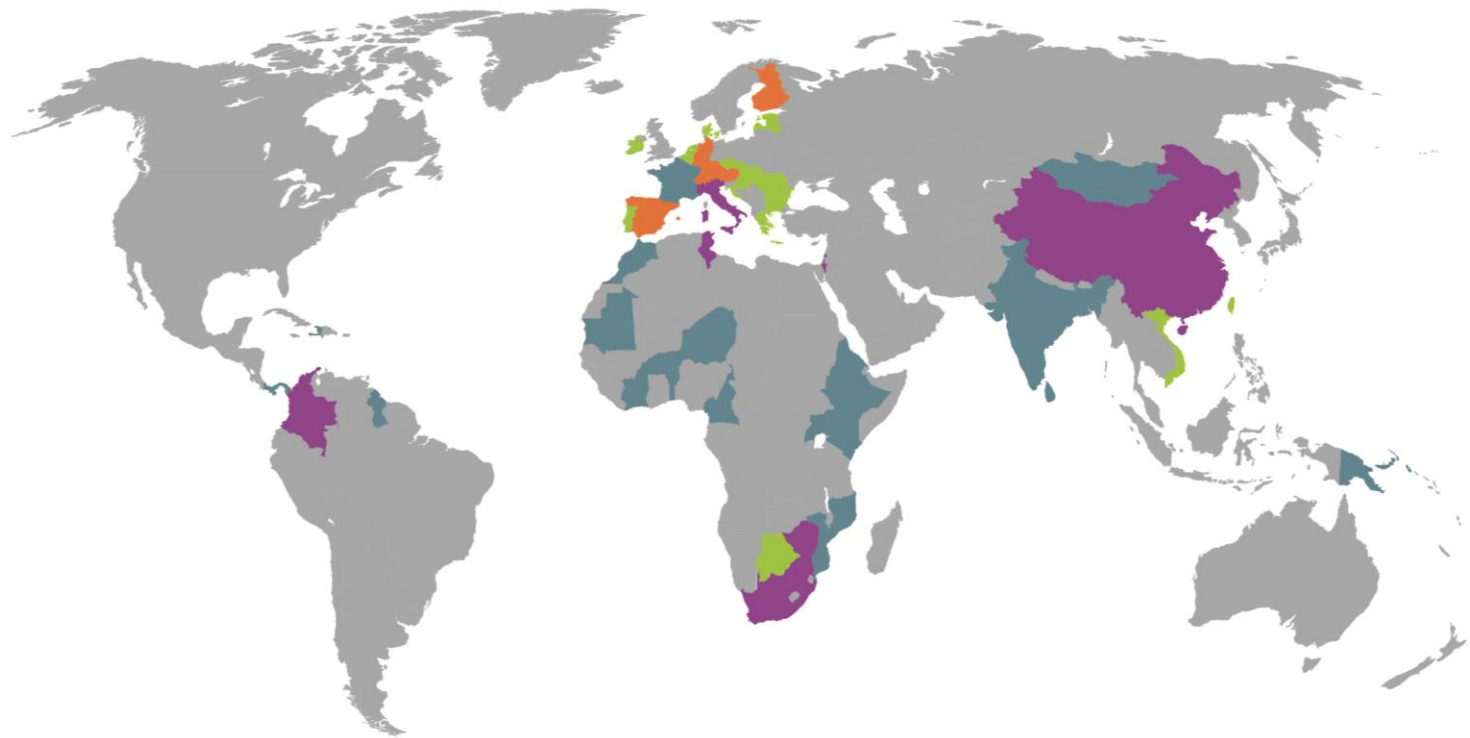
## Global primary plastics waste generation, 1950 - 2015



# Global trends: types of regulations

## National level plastic bag bans and styrofoam regulations

- Total or partial ban
- Economic instruments
- Combination
- Private public agreement



# Global trends: Impact

## Impact of national bans and levies on plastic bags



No to little impact

**20%**

Reduced consumption  
or less pollution

**30%**

No data on impact

**50%**

Main issues of reported  
no or little impact seem  
to be:

- i) Lack of enforcement
- ii) Lack of affordable alternatives

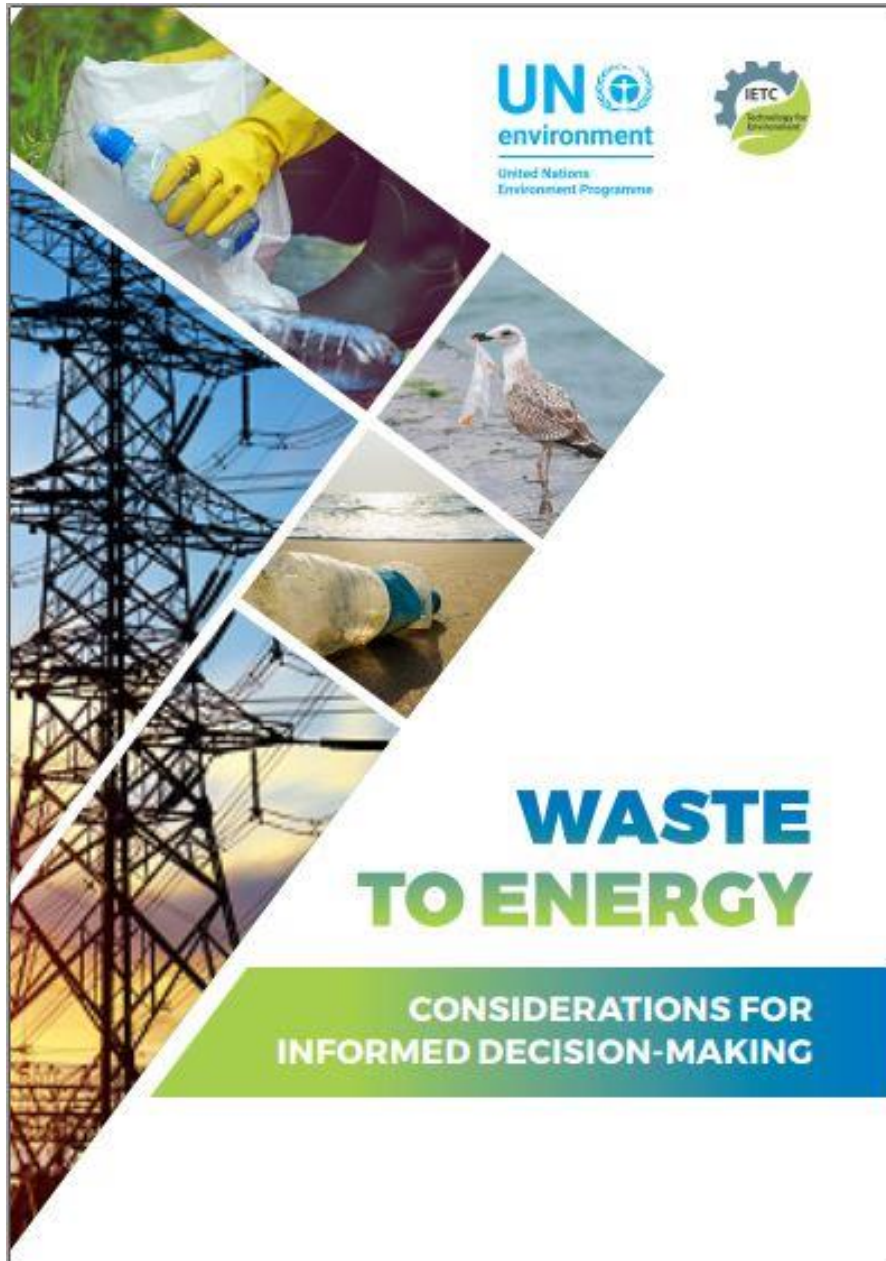




Figure 1.8 MSW incinerated with energy recovery and number of thermal WtE plants (by region)

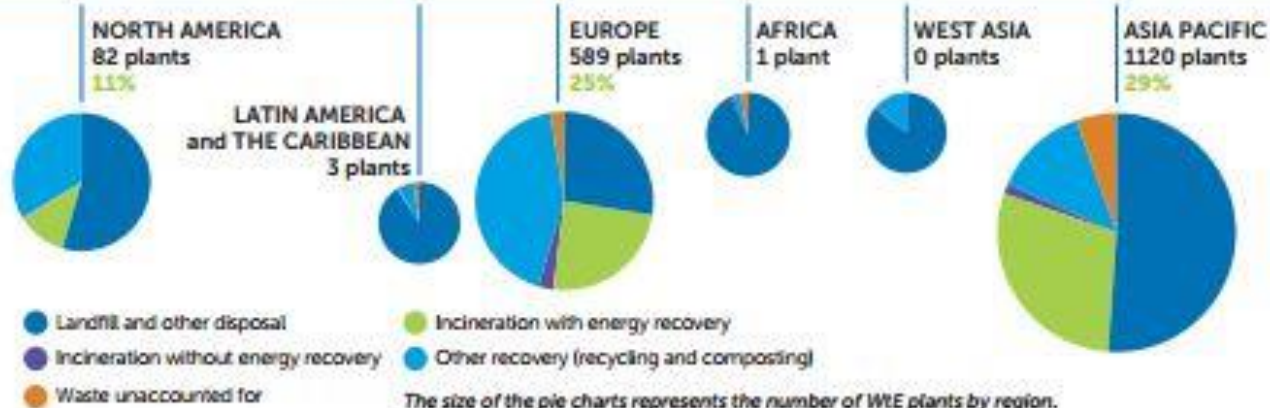


Figure 1.9 Top 11 countries with the most thermal WtE plants, including amount of waste incinerated with energy recovery



Figure 2.8 MSW treatment methods in selected countries<sup>4</sup>





# Japan – History and Trend

Figure 1.5 MSW generation in Japan<sup>23</sup>

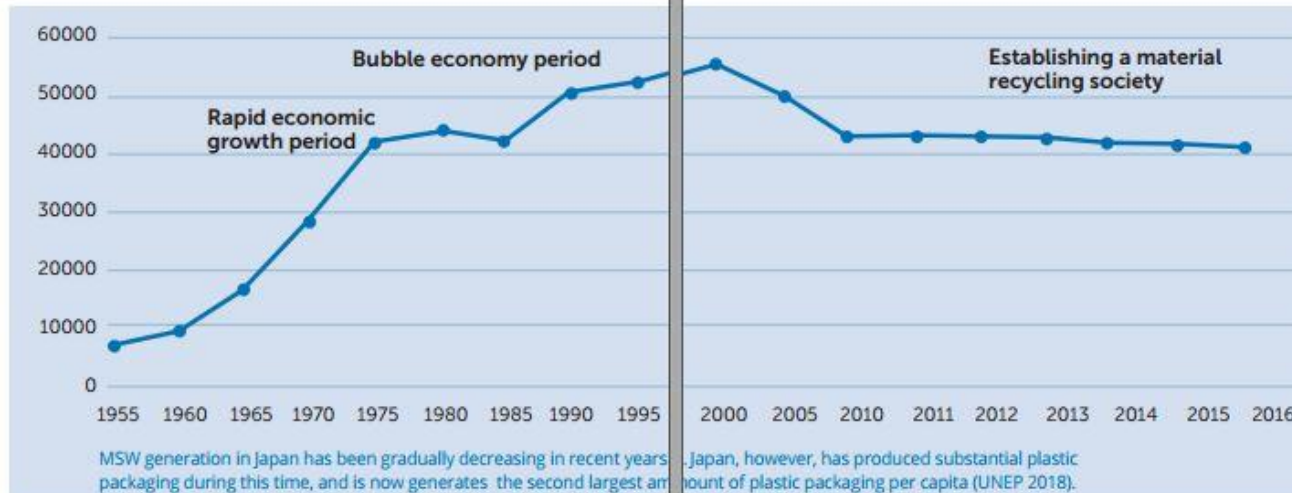


Figure 1.7 Number of waste incinerators with and without energy recovery in Japan<sup>4</sup>

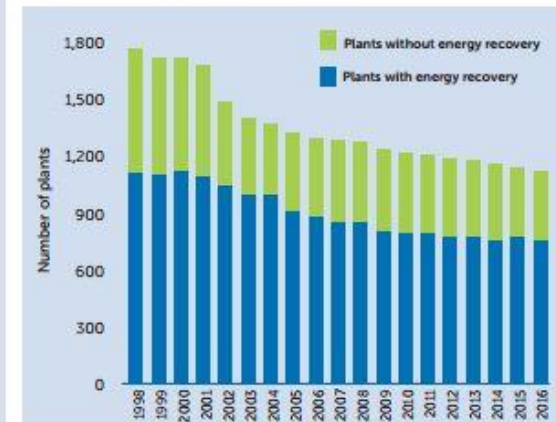
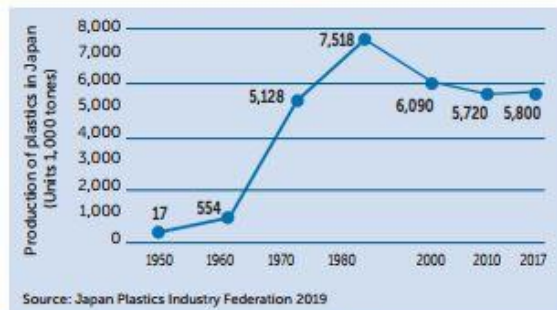


Figure 1.6 Plastic production in Japan



The production of plastic waste increased by more than 13-fold from 1960 to 1980 in Japan.

## ★ LESSONS LEARNED

Waste management progress in Japan provides a good example of energy recovery for less developed countries. Technological advancement allows developing countries to choose the less polluting thermal WtE technology, compared to what was available to them in the past. In concert with these new technologies, waste management strategies should be implemented based on local needs and subjected to periodic review and adjustment. It is important to note that the waste hierarchy is not a ladder for a waste management system. Developing countries should consider leapfrogging and adopting a top-down approach to introduce the 3Rs in their waste management systems before considering thermal WtE recovery options.



Figure 2.1 Net calorific value of different waste types found in MSW (World Energy Council 2016a)



Figure 2.2 MSW composition in developing countries (World Bank 2018)

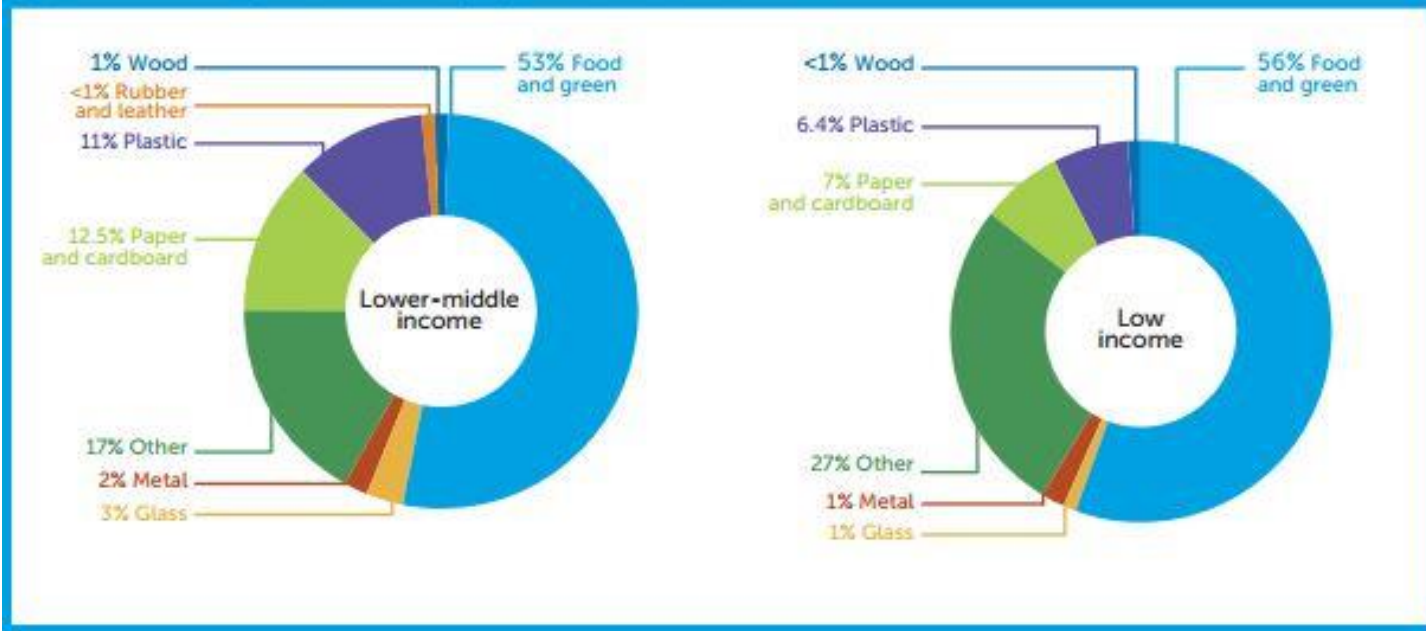
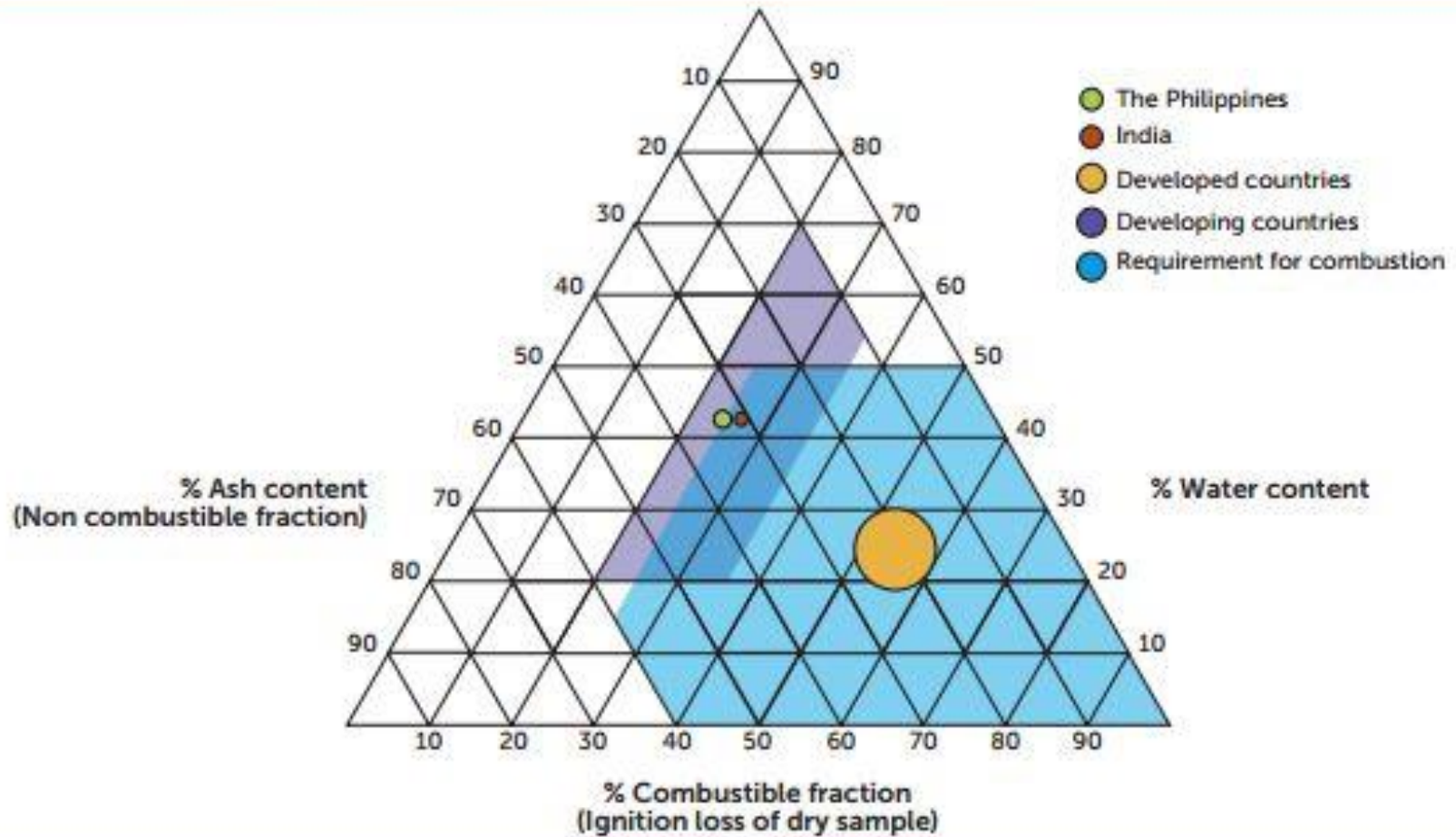


Figure 2.3 Tanner triangle for combustibility assessment of MSW (in percentage by weight)<sup>1</sup>



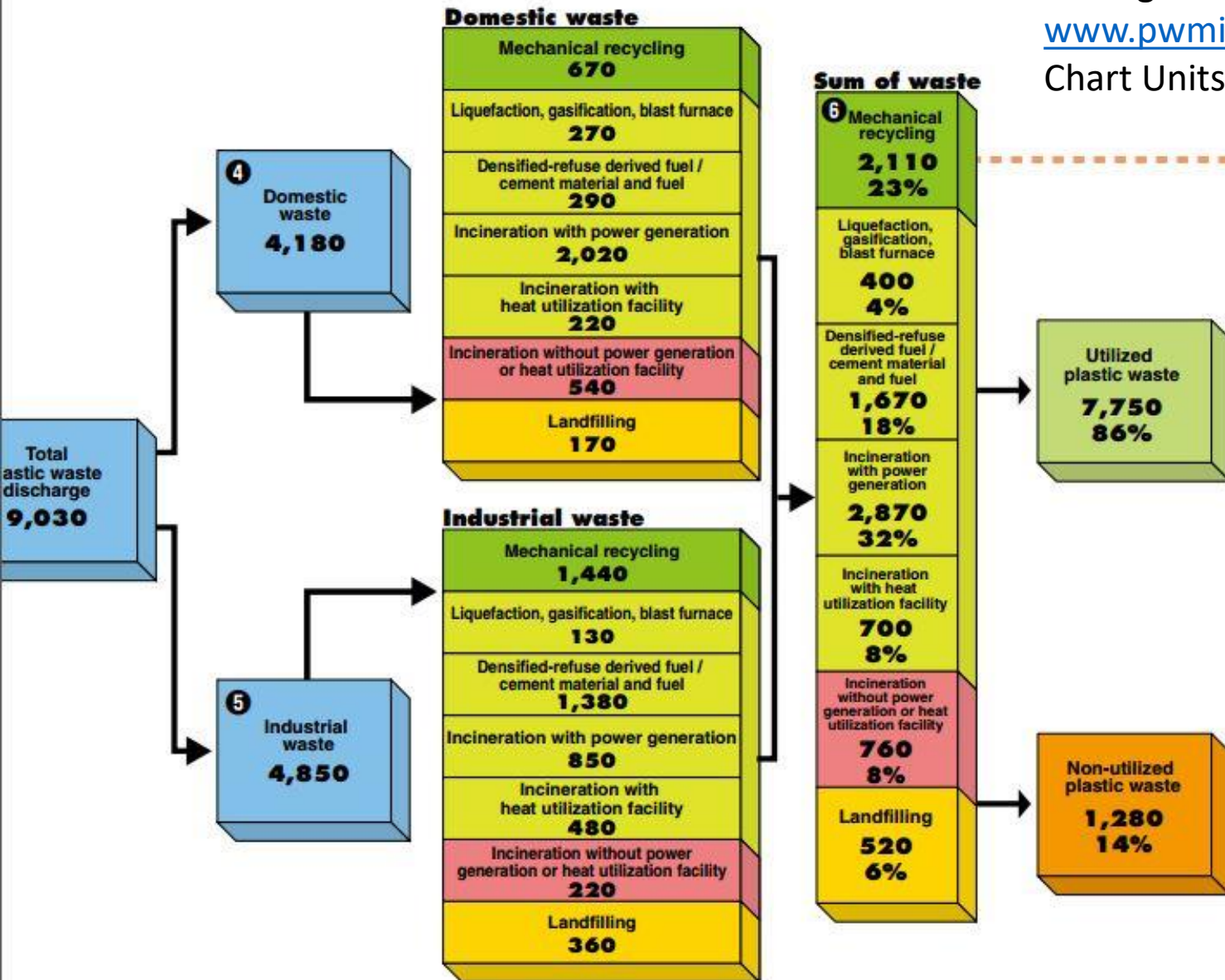
**Figure 2.6 Estimated total cost of a thermal WtE plant in Europe (Neubacher 2010)**



Estimated lifespan: 40 years  
Total cost: 705-1815 million Euros

Decommissioning cost is not included in the operational costs in this figure as data is not available.

## Disposal and recovery



What Monitoring can look like!

Japan Plastic Waste  
Management Institute

[www.pwmi.org.jp](http://www.pwmi.org.jp)

Chart Units: Kilotons in 2017





KeithAlverson



@AlversonKeith

@unep\_ietc



unep\_ietc

[www.unep.org/ietc/](http://www.unep.org/ietc/)

[keith.alverson@un.org](mailto:keith.alverson@un.org)







**Tackling Marine Litter in the  
East Asian Seas Region**

Natalie Harms  
COBSEA Secretariat



A stylized map of East Asia and Southeast Asia, showing the Korean Peninsula, Japan, China, and the Southeast Asian archipelago. The map is rendered in shades of blue and green, with a white outline for the landmasses. It is positioned on the left side of the slide, partially overlapping a dark teal background.

# Coordinating Body on the Seas of East Asia

## Regional Seas

18 Conventions and Action Plans, seven administered by UN Environment

---

## East Asian Seas Action Plan 1994

Action Plan for the Protection and Sustainable Development of the Marine and Coastal Areas of the East Asian Seas Region

---

## COBSEA participating countries

Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, Philippines, Singapore, Thailand, Vietnam

---

## Secretariat

Hosted by Thailand, administered by UN Environment

**COBSEA**

COORDINATING BODY ON THE SEAS OF EAST ASIA

# COBSEA marine litter activities



## COBSEA Strategic Directions 2018-2022

Guides action toward protection of marine environment, including addressing land-based pollution



## Regional Action Plan on Marine Litter

Guides integrated management of marine litter: land-based sources, sea-based sources, monitoring & assessment, means of implementation



## COBSEA Working Group on Marine Litter

Technical body to support implementation of the RAP MALI, advising and assisting IGM and Secretariat



## Regional Node of the GPML

A knowledge hub on marine litter to bridge knowledge gaps, build research networks, map existing data and initiatives, and provide tools to build capacity for multi-stakeholder action



## SEA circular & SEA of Solutions

Regional project to prevent plastic marine litter through upstream action. SEA of Solutions is an annual partnership week for exchange of solutions and collaboration



## Less plastic wasted, reduced leakage & impact on the marine environment & communities

Target countries      Thailand, Malaysia, Cambodia, Indonesia, the Philippines, Vietnam

Knowledge partners      Republic of Korea, China, Singapore

Approach      Regional – Value Chain – Multi-stakeholder – People-centred

### Output 1. Market-based solutions

- Stakeholders measure & report plastic footprint
- Stakeholders manage their plastic value chain
- Business incentives for plastic reduction & recycling

### Output 2. Science-basis for decision making

- Assessment of plastic leakage & hotspots
- National & regional marine litter monitoring
- Training on monitoring and assessment
- Knowledge hub / Regional Node on marine litter

### Output 3. Outreach & capacity building

- Social & economic impacts better understood
- Targeted training, MOOCs
- Outreach campaigns/consumer awareness
- Enabling policy change

### Output 4. Regional networking

- Policy dialogue & constituency engagement
- Regionally coherent national plans & policies
- Information sharing & stakeholder engagement
- SEA of Solutions: 11-14 Nov Bangkok

# Leveraging COBSEA for regional support



## Regionally coherent national marine litter planning

COBSEA RAP MALI

ASEAN Framework of Action on Marine Debris



## Assessment of marine litter accumulation and leakage hotspots

Methodology developed by East China Normal University (ECNU)



## Harmonizing marine litter monitoring approaches

Training on GESAMP Guidelines on Monitoring & Assessment of Marine Litter & Microplastics



## Development of a GPML Node on ML

### Knowledge Hub

Economic Research Institute for ASEAN and East Asia (ERIA)

### Science/Research Hub

National University of Singapore (NUS)  
ECNU

### Capacity Hub

Regional Capacity Center on Clean Seas (RC3S)



# SEA of Solutions

partnership week for marine plastic pollution prevention  
11-14 November 2019, UNCC, Bangkok

DAY 1: Science for Change

DAY 2: Plasticity Forum

DAY 3: Localizing Action

DAY 4: Solutions Forum



**JOIN US!**

**register now to participate, contribute to a session, or secure a booth space**

<http://sos2019.sea-circular.org/registration/>



[SEA-circular@un.org](mailto:SEA-circular@un.org)

SEA circular | UN Environment UN  
Building, Rajdamnern Nok Avenue  
Bangkok, Thailand



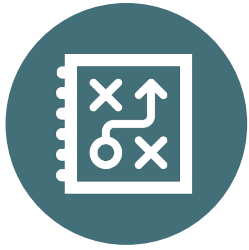


Natalie Harms  
COBSEA Secretariat, UN Environment Programme  
natalie.harms@un.org  
unep-cobsea@un.org

[www.cobsea.org](http://www.cobsea.org)  
<https://www.sea-circular.org/>  
[www.unenvironment.org](http://www.unenvironment.org)



# 2019 Regional Action Plan on Marine Litter



**Goal:** Facilitate coordination & guide regionally coherent management of marine litter in line with global/regional goals

- Prevent and reduce pollution & leakage
- Foster sustainable consumption & production
- Remove existing marine litter
- Enhance knowledge sharing & awareness
- Support national frameworks & cross-sector cooperation

Action 1. Land-based sources

Action 2. Sea-based sources

Action 3. Monitoring & assessment

Action 4. Enabling conditions

# Establishing a GPML Regional Node on ML



GPML

COBSEA WG ML

COBSEA Secretariat

## EAS Regional Node of GPML

Knowledge Hub/Network  
“Regional Knowledge  
Centre on Marine Plastic  
Debris”  
Development and  
implementation:  
Economic Research  
Institute for ASEAN and  
East Asia (ERIA)

Science Hub/Network  
Development and  
implementation:  
East China Normal  
University (ECNU),  
National University of  
Singapore (NUS)

Capacity Hub/Network  
Development and  
implementation:  
Regional Capacity Center  
on Clean Seas (R3CS)



**UN**   
**environment**

United Nations  
Environment Programme

# Science-based Solutions to Clean the Sea

---

NOWPAP Workshop on Marine Litter  
24-27 September 2019, Dalian China

---

**Jinhua Zhang**

Regional Coordinator

Environment Under Review - Asia Pacific

UN Environment Programme

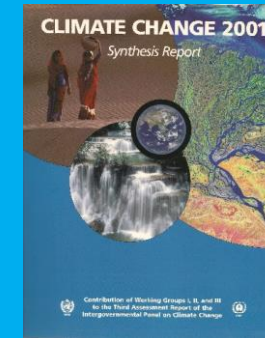
# UNEP Mandate: *to keep under review the state of the global environment...*



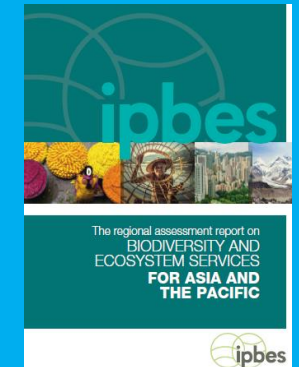
## Global Environment Outlook 6

- Bring together a community of hundreds of scientists, governments, peer reviews, collaborating institutions, partners and stakeholders
- Providing a legitimate, credible and science-based analysis of the situation, and looking at environmental policy options for the future
- Outlining the way forward to address the environment dimension of the United Nations Sustainable Development Goals

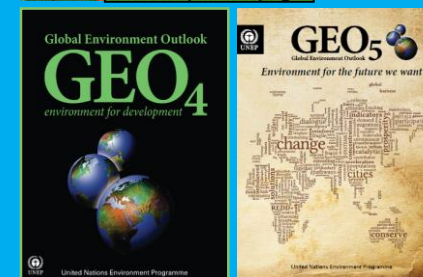
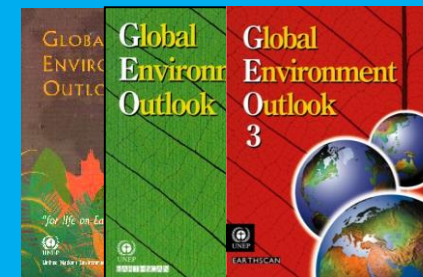
IPCC



IPBES



## Global Environment Outlook





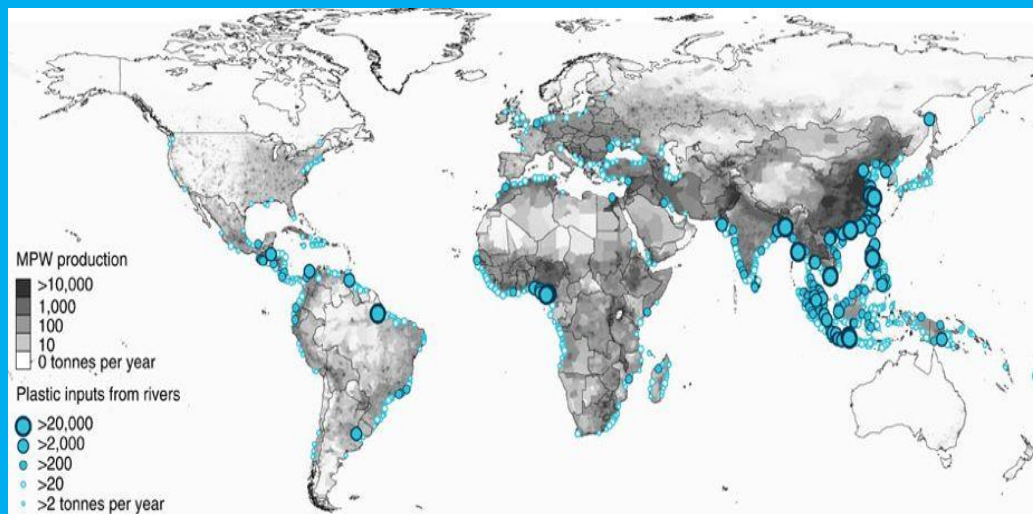
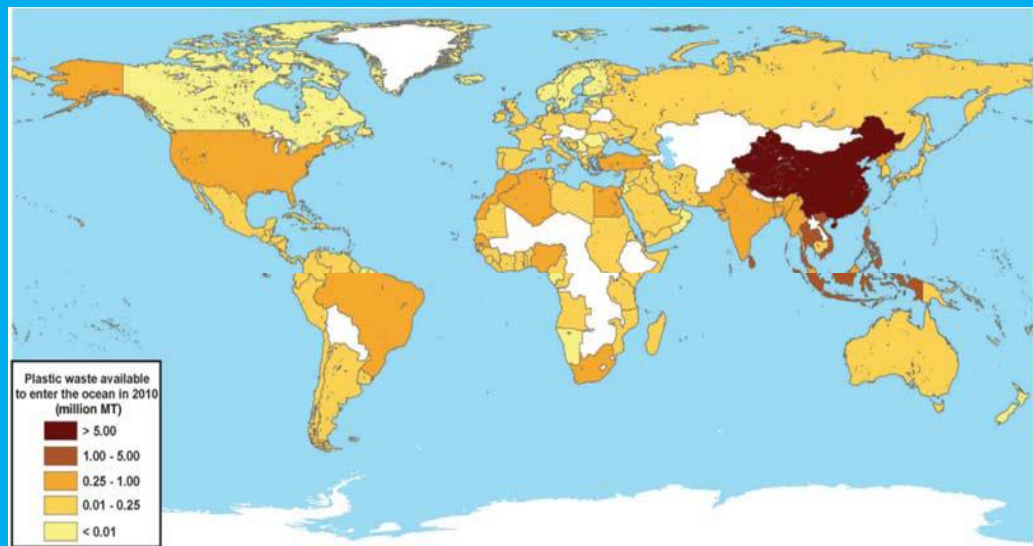
# GEO-6: Messages on Ocean and Coasts



## State of the Environment: Oceans and Coasts

- **Coral Reefs** – bleaching events are now occurring at 6-year intervals, while recovery normally takes 10 years.
- **Fisheries and aquaculture** – These support between 58-120 million livelihoods and generated US\$362 billion in revenue in 2016.
- **Nutrition** – fish provide over 3 billion people with 20 per cent of their dietary protein.
- **Marine plastics** – 8 million tons of plastic enter the oceans each year through mismanagement of domestic waste on land.

# Methodology for Marine Litter Hotspot Assessment



## Methodology for Marine Litter Hotspot Assessment

UNEP and East China Normal University



# Where should we start?

In order to tackle this problem efficiently at regional and national scale:

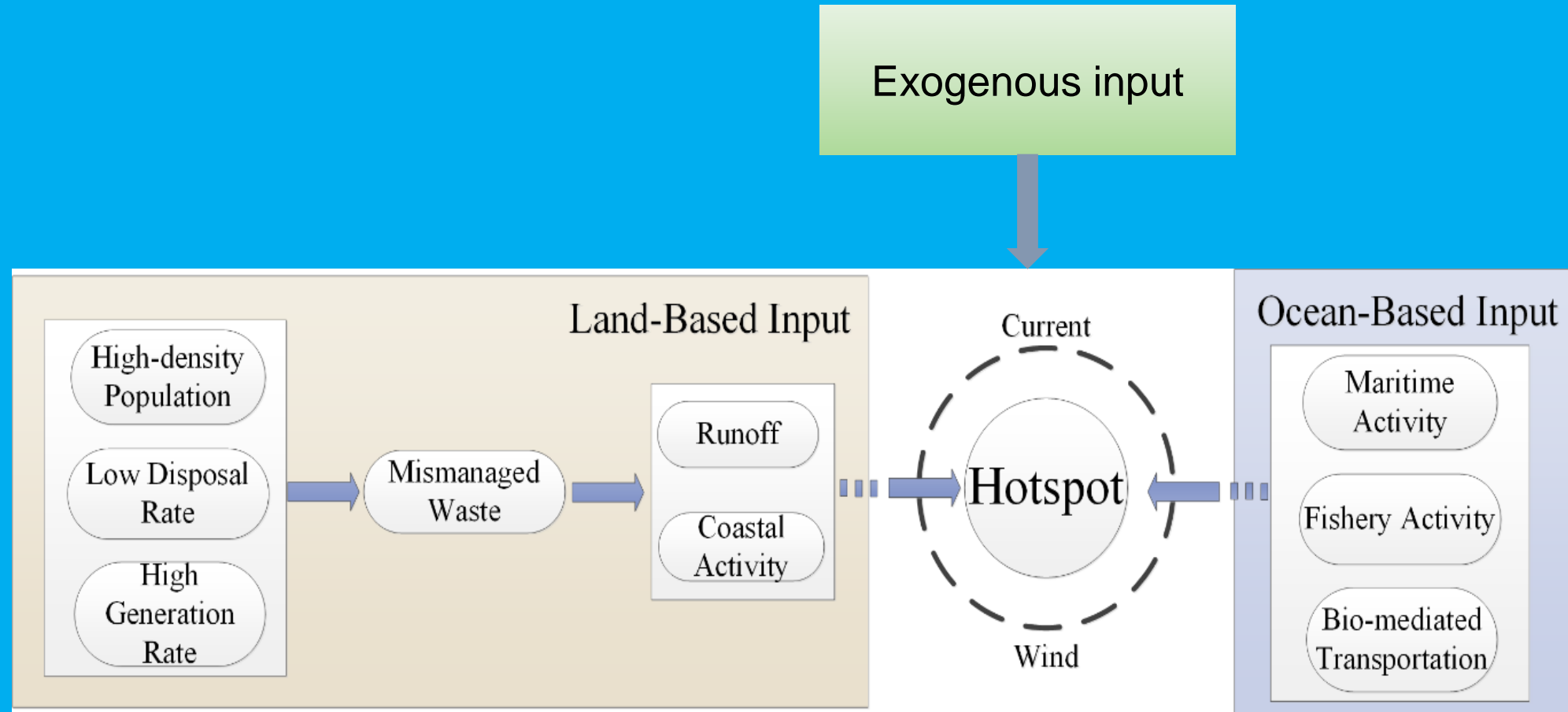
## Where should we start ?

- High contamination level (high abundance)
- High ecological or economic risk 



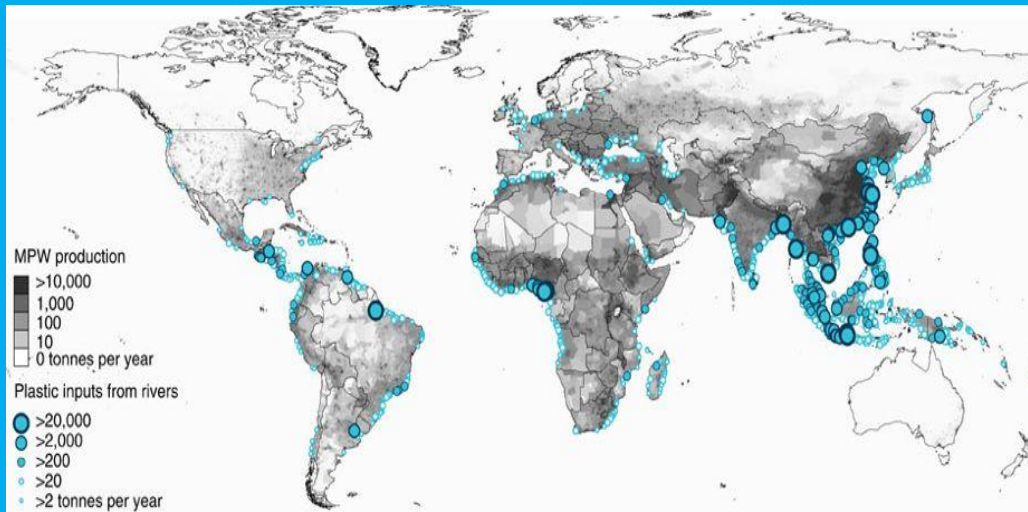
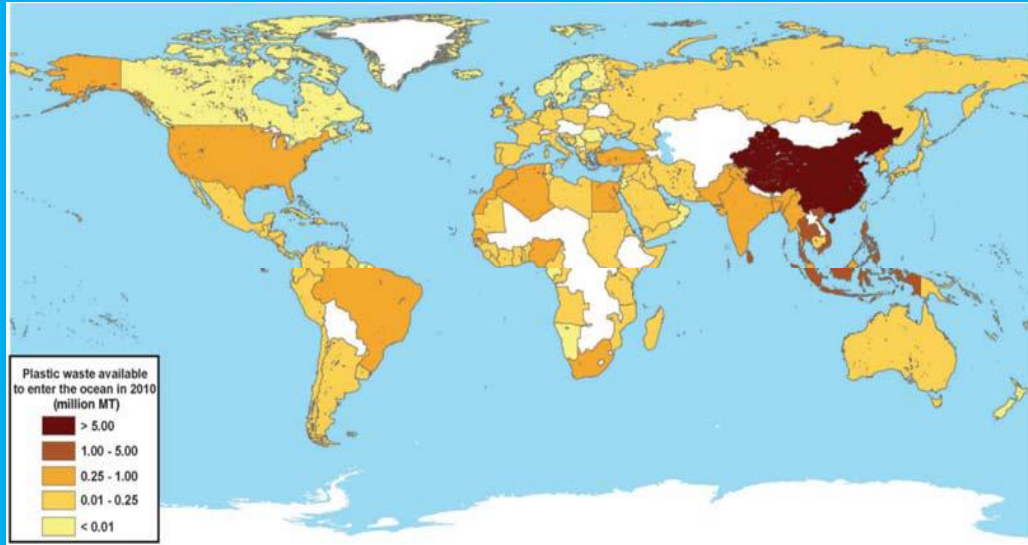
**Marine litter hotspot identification**

# Main sources of marine litter in a specific region





# Knowledge and Data on Marine Litter in Asia



## Review of Current Knowledge and Data on Marine Litter in Asia



# Review of Knowledge and Data on Marine Litter in Asia

**Table 1. Waste estimates for 2010 for the top 20 countries ranked by mass of mismanaged plastic waste (in units of millions of metric tons per year).** Econ. classif., economic classification; HIC, high income; UMI, upper middle income; LMI, lower middle income; LI, low income (World Bank definitions based on 2010 Gross National Income). Mismanaged waste is the sum of inadequately managed waste plus 2% littering. Total mismanaged plastic waste is calculated for populations within 50 km of the coast in the 192 countries considered. pop., population; gen., generation; ppd, person per day; MMT, million metric tons.

Rank	Country	Econ. classif.	Coastal pop. [millions]	Waste gen. rate [kg/ppd]	% plastic waste	% mismanaged waste	Mismanaged plastic waste [MMT/year]	% of total mismanaged plastic waste	Plastic marine debris [MMT/year]
1	China	UMI	262.9	1.10	11	76	8.82	277	1.32–3.53
2	Indonesia	LMI	187.2	0.52	11	83	3.22	10.1	0.48–1.29
3	Philippines	LMI	83.4	0.5	15	83	1.88	5.9	0.28–0.75
4	Vietnam	LMI	55.9	0.79	13	88	1.83	5.8	0.28–0.73
5	Sri Lanka	LMI	14.6	5.1	7	84	1.59	5.0	0.24–0.64
6	Thailand	UMI	26.0	1.2	12	75	1.03	3.2	0.15–0.41
7	Egypt	LMI	21.8	1.37	13	69	0.97	3.0	0.15–0.39
8	Malaysia	UMI	22.9	1.52	13	57	0.94	2.9	0.14–0.37
9	Nigeria	LMI	27.5	0.79	13	83	0.85	2.7	0.13–0.34
10	Bangladesh	LI	70.9	0.43	8	89	0.79	2.5	0.12–0.31
11	South Africa	UMI	12.9	2.0	12	56	0.63	2.0	0.09–0.25
12	India	LMI	187.5	0.34	3	87	0.60	1.9	0.09–0.24
13	Algeria	UMI	16.6	1.2	12	60	0.52	1.6	0.08–0.21
14	Turkey	UMI	34.0	1.77	12	18	0.49	1.5	0.07–0.19
15	Pakistan	LMI	14.6	0.79	13	88	0.48	1.5	0.07–0.19
16	Brazil	UMI	74.7	1.03	16	11	0.47	1.5	0.07–0.19
17	Burma	LI	19.0	0.44	17	89	0.46	1.4	0.07–0.18
18*	Morocco	LMI	17.3	1.46	5	68	0.31	1.0	0.05–0.12
19	North Korea	LI	17.3	0.6	9	90	0.30	1.0	0.05–0.12
20	United States	HIC	112.9	2.58	13	2	0.28	0.9	0.04–0.11

\*If considered collectively, coastal European Union countries (23 total) would rank eighteenth on the list

## Review of Current Knowledge and Data on Marine Litter in Asia

### Table of Contents

ACKNOWLEDGEMENTS.....	7
LIST OF ACRONYMS .....	8
I. INTRODUCTION .....	9
II. REVIEW OF CURRENT KNOWLEDGE AND DATA ON MARINE LITTER IN ASIA .....	12
<b>2.1 Regional context .....</b>	<b>12</b>
<b>2.2 Country analysis.....</b>	<b>13</b>
<i>Bangladesh.....</i>	<i>13</i>
<i>Brunei Darussalam .....</i>	<i>14</i>
<i>Cambodia.....</i>	<i>15</i>
<i>China.....</i>	<i>16</i>
<i>India .....</i>	<i>18</i>
<i>Indonesia .....</i>	<i>20</i>
<i>Japan.....</i>	<i>23</i>
<i>Democratic People's Republic of Korea.....</i>	<i>25</i>
<i>Republic of Korea .....</i>	<i>25</i>
<i>Maldives .....</i>	<i>27</i>
<i>Myanmar.....</i>	<i>28</i>
<i>Pakistan.....</i>	<i>29</i>
<i>The Philippines.....</i>	<i>29</i>
<i>Singapore.....</i>	<i>30</i>
<i>Sri Lanka.....</i>	<i>31</i>
<i>Thailand.....</i>	<i>32</i>
<i>Timor-Leste.....</i>	<i>33</i>
<i>Vietnam.....</i>	<i>34</i>
III CONCLUSIONS .....	35
REFERENCES .....	37

# Public-Private Partnership: leadership & innovation

## Lead-free petrol: a global success by partnership: public-private-UNEP

### **Global success**

In mid 2002, 82 countries were using leaded petrol

In March 2019, two countries are remaining and plan to eliminate

Thank you

---

**Jinhua Zhang**  
Regional Coordinator  
Environment Under Review - Asia Pacific

---

<https://www.unenvironment.org/regions/asia-and-pacific>





# 大连海岸带海洋垃圾调查与清除行动



大连市环保志愿者协会

唐在林

2019年9月25日

大连市环保志愿者协会，从**2003**年起，开展海洋垃圾的调查与清除活动，是全国公益（NGO）组织中最先针对海洋保护进行行动的机构。**2012**年，在环保部环科院陈浩博士的指导下，又针对海洋近岸滩涂的微塑料垃圾，进行定点长期的监测调查活动。



# 大连海岸带海洋垃圾调查点位示意图

我要上报

我要查询



对大连海岸带32个监测点进行海洋垃圾状况的调查



# 海岸线调查区域

- 旅游区 →
- 住宅区
- 工业区
- 养殖区
- 原生态区 ↓





# 调查统计



## 海岸带海洋垃圾

调查地的具体位置：  
东经：12 度  
北纬： 度

序号	物品类别
一	塑料类
1	食品包装、
2	瓶杯、容
3	绳、带
4	渔线、养
5	打火机、
二	橡胶类
1	气球、
2	手套、
3	轮胎及
三	泡沫类
1	饮食/
2	包装
3	浮标
四	纸类
1	纸
2	纸
3	香
五	其他
1	
2	
六	
1	
2	
3	
七	
1	
2	
3	

中华环境保护基金会“迈向生态文明 向环保先锋致敬”环保公益资助计划资助

## 大连海岸带海洋垃圾调查与清除活动数据表

感谢您参加本次调查与清除海洋垃圾环保公益活动。请您听从组织者的安排，认真细致地做好先在选定的位置区域，按规程进行海洋垃圾收集、分类、计数、称重、记录等调查工作，得出数据内容无遗漏地填好。

我们将据此编写调查报告并向政府部门和社会公众发布。相信，我们的努力会给海洋环境带来有益的改变。

### 海岸带调查基础数据表 (A表)

调查的日期： 年 月 日 星期 天气状况：

调查地名称： 调查区域号：

详细地址：大连市 区(市、县) 街道(镇村) 路 号

调查地的管辖单位： 调查地联系人： 联系电话： 手机：

电子邮箱： 联系地址： 手机：

调查地类别： 旅游区  港口码头  工业区沿岸  生活区  养殖区  湿地

调查地类型： 沙石海滩  淤泥海滩  海面  海底  河口  岛屿

潮汐状态： 满潮  平潮  枯潮

湿地状况调查

湿地区域面积： km 湿地缓冲区面积： km

湿地植被类型： 灌木层  草本层  多度  高度

湿地受威胁因子： 开发建设  围垦养殖  某种污染  水土流失

水源补给不足  盐碱化  外来物种入侵  沙化

海水状况

调查地海水温度： °C 水质： 是否有漂浮物

海水色度： 浊度： 气味：

海滩游人状况： 海滩卫生状况： 气味：

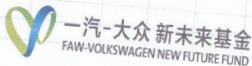
调查活动人数： 其中：男性 女性 儿童

清除垃圾总数量(袋)： km 活动调查耗用时间： 小时

清除垃圾总重量： kg

主办单位：大连市环保志愿者协会 地址：大连市西岗区双兴街25-1号 网址：www.depvc.org

本次活动负责人： (签字) 本次活动调查员： (签字)







## 海滩



组织社会各界志愿者开展对大连海岸带调查区域内的海洋垃圾清除活动。使海滩、海面、海底变得干净，生态景观得到恢复。





# 海面







海底





常年开展海洋环保知识宣传与讲座学习**200**余次，加强媒体宣传引导与教育，平均年受众近**20**万人次。



# 海洋微塑料垃圾的调查





# 社会影响力



本活动曾获得联合国开发计划署、全球环境基金、小额赠款计划、中华环保基金会、中国扶贫基金会、一汽大众、中国海洋发展基金会等机构的支持。

各级新闻媒体对本项目的大量报道，提升了企业及社会公众对海洋环境保护的关注、支持和参与。



活动模式，已在联合国开发计划署网站及中国海岸线垃圾清理与监测网平台分享，在全国其它沿海城市推广，而且对沿江、沿河、沿湖城市的水体垃圾污染控制方面有重要的借鉴和可复制性。通过海岸线保护和水污染防治活动，对各地经济的增长具有明显的潜在的推动。



gef GEF The GEF Small Grants Programme UNDP

## GEF Small Grants Programme China 全球环境基金小额赠款中国项目

关于 GEF SGP 重点领域 国家战略 出版物 联系我们

首页 > 项目动态 >

### 6·5环境日启动大连海岸带海洋垃圾调查与清除项目

发布于: 2010-12-27 15:50:00



大连海岸线海洋垃圾调查与防治项目启动以来，3月至4月，确定了100名志愿者参加调查专项培训，项目实施机构通过理论培训、现场实际培训、现场演练等过程，及参照日、韩、俄等国海洋垃圾调查的经验，使参加培训的调查骨干人员了解和掌握了海滩表面垃圾和埋没垃圾调查的基本方法，掌握从捡拾收集、分类、计数、称重、记录到上报汇总的各个环节的要求和注意事项。在此基础上，4月底5月初两次对大连黄海岸线从星海湾至大连市与丹东市海岸交界处800余公里的海岸线进行实地调查，并于五月下旬完成了《大连海岸带海洋垃圾调查与防治指南》的编写印刷。

项目实施机构于4月8日成功召开了“大连海岸带海洋垃圾调查与防治研讨会”。大连市环保局、海洋与渔业局、港口与口岸局、海事局、发改委、文明办、爱卫会、城建局、林业局、团市委等大连市十个部门的代表、大连港集团、东达集团、中远船务、大连石化等部分企业代表和国家海洋环境监测中心、大连海事大学、大连海洋大学的专家、各区市县和各界的环保志愿者共计50余人参加了此次研讨会。多家媒体对此进行了报道。




中国海岸线垃圾清理与监测网 Coastal Cleanup and Monitoring Project in China

首页 关于我们 科研版 公众版 净滩活动 志愿者工具包 联系我们

# 2016 INTERNATIONAL COASTAL Cleanup




中国海岸线垃圾清理与监测项目

中国有着约18000公里的大陆海岸线，海岸线附近聚集了中国40%以上的人口，但在海洋垃圾等污染威胁下，中国海岸线生态岌岌可危。海洋垃圾是人类制造的漂浮在大海或水道上的各种废弃物，这些海洋垃圾一部分停留在海滩上，一部分可漂浮在海面或沉入海底。中国海岸线垃圾清理与监测网于2014年11月1日正式启动。凝聚社会力量，动员公众参与到海岸线清理与监测；协调社会团体、科研机构开展海岸线垃圾监测研究；为各级政府部门海岸线垃圾治理政策提供支持。

在政府各级部门的重视下，在环保公益组织常年坚持不懈的带动和影响下，大连的海岸线垃圾现状有了根本上的转变，每天，除了专业保洁人员外，志愿者组织、义工团队及许多市民都自发的到海边清理海滩垃圾，他们的行动影响到来海边休闲的游客能自觉的把垃圾带走。

近年来，大连海岸呈现给人们的印象是“岸洁，水清、滩净、湾美、岛丽”。环境的美好，进一步提升了公众对海洋生态环境保护意识的提高。





今天下午将要进行的是：

## 国际海滩垃圾清扫活动（ICC）

活动现场呈现在各位代表眼前的现象将不会是这样：





随着公众环保意识和行动的加强，净滩活动持久坚持进行，海滩垃圾将逐渐由大变小，又小变微，越来越少。



16年行动验证了净滩活动是

*最简洁明了;*

*最富有成效;*

*最容易参加;*

*最有效保护的行动。*



# 谢谢

