

Online Workshop
"Strengthening Capacity for Marine Debris Reduction and Waste Management
in ASEAN Region through Knowledge Sharing on Marine Litter"

Session 3: Scientific approach for managing leakages and monitoring marine plastics

Fields of Sciences related to Marine Plastic Debris

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Why marine plastic matters?

Scientific Finding

- Marine ecosystem was disrupted by plastics
 - Marine mammals, birds, fishes, etc.
- Impact to human health is still not clear enough.
- But increasing volume plastic in the ocean may cause more negative impacts to marine ecosystem and human health in the future.
- Precautionary Principle should be applied, because it may be costly to collect plastics from the ocean

International Response

- The dumping of plastic waste were prohibited in 1970s by London Convention and MARPOL.
- UNEA have discussed the issue from the 1st in 2014.
- G7 Plastic Charter, 2018
- G20 Blue Osaka Vision, 2019

ASEAN

- South East Asia is regarded as a major sources of leakage of plastic waste to the ocean (Jambeck et. al. 2015).
- ASEAN also responds to the issue.
 - ASEAN Framework of Action on Marine Debris, 2019

Various Counter Measures

- **Reduction of use of plastics, use of alternative materials**

- Ban or levy on single use plastics
- Design for reducing use of plastics
- Use of biodegradable plastic

- **Preventing leakage from sources**

- Factory: preventing leakage of resin pellet.
- Install filter to collect capsule of slow-release fertilizer, worn-out artificial turf and others
- Domestic wastewater treatment
 - Central wastewater treatment
 - Decentralized wastewater treatment

- **Recycling**

- Design for recycling
- Source separation
- Buy back center, waste bank
- Extended Producer Responsibility
- Eco labeling, Green Procurement

- **Waste collection and disposal**

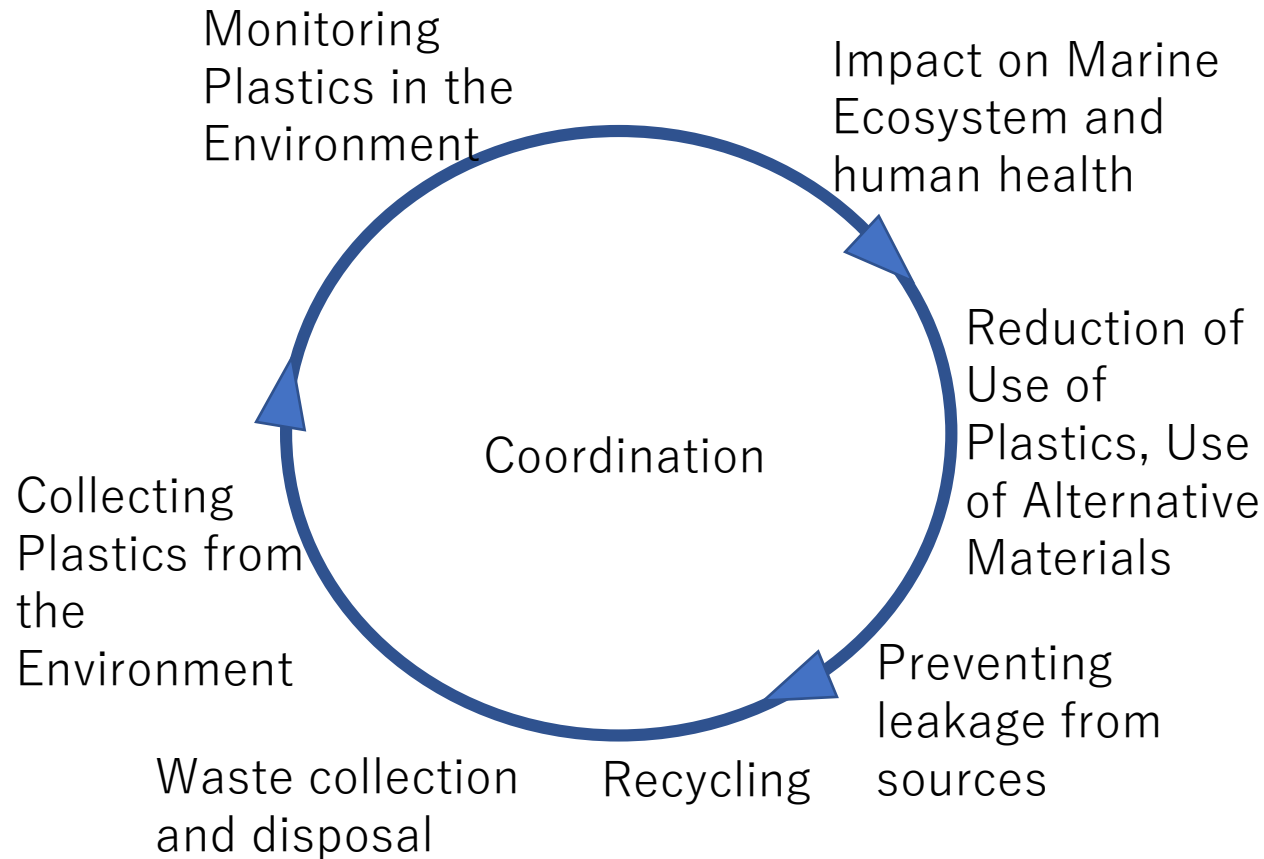
- Expand waste collection services
- Sanitary landfill
- Waste to energy

- **Plastics collection from the environment**

- Beach, river, ocean clean up
- Trash rack

Policy Cycle to Reduce Marine Plastic Debris

Show Necessity of Action (the effectiveness of counter measures)



Countermeasures to Reduce Marine Plastics

- Monitoring plastic and the impact of plastics on marine ecosystem shows the necessity of counter measures. The overall effectiveness of countermeasures should be evaluated by the monitoring result of plastic leakage.
- To find innovative solution, and improve the quality of each action, we need scientific knowledge.

The Need of Various Scientific Knowledges

| Topic | Area of Science, Methodology, Challenges |
|--|--|
| Monitoring Plastics in the Environment | Environmental Science (monitoring) Harmonization |
| Impact on Marine Ecosystem and human health | Biology, Medical Science, Long-term impacts on human health Economics(cost of damage) |
| Reduction of Use of Plastics, Use of Alternative Materials | Engineering (Find alternative material , Life Cycle Assessment) Economics, Sociology (behavior change) |
| Preventing leakage from sources | Engineering (wastewater treatment) Economics, Sociology (behaviour change: littering) |
| Recycling | Engineering (technology) Multilayer plastic packages Social sciences (source separation, EPR) |
| Waste collection and disposal | Engineering. Public Administration (public private partnership, inter-municipal cooperation) Expand waste management services |
| Collecting Plastics from the Environment | Engineering (technology) Social sciences (financial mechanism to bear the cost) Economics (cost of collecting and disposal) Cost of collection and disposal |

Regional Knowledge Centre for Marine Plastic Debris (RKC-MPD)

Information clearinghouse about marine plastic pollution in ASEAN+3 countries, aiming at facilitating national and regional cooperation by promoting relevant policies and good practices among the member states.

Established in October 2019 **as a subsidiary body** of the Economic Research Institute for ASEAN and East Asia (ERIA).

Knowledge Sharing on RKC-MPD ERIA Website

<https://rkcmpd-eria.org/>

The screenshot displays the website's navigation menu with 'GOOD PRACTICES' circled in red. Below the navigation is a large banner image of a sunset over water with the text 'GOOD PRACTICES'. The main content area features four cards, each with an image, a title, a short paragraph, and a right-pointing arrow. The 'Government Initiatives' and 'Scientific Knowledge' titles are circled in red.

ERIA | REGIONAL KNOWLEDGE CENTRE FOR MARINE PLASTIC DEBRIS

ABOUT **GOOD PRACTICES** PRIVATE SECTOR PUBLICATIONS EVENTS UPDATES

GOOD PRACTICES

National Framework to Tackle Marine Plastic Debris

Solving the issue of marine litter requires the involvement and cooperation of ministries in charge of fishery, coastal and river...

Government Initiatives

To prevent marine plastic litter, various policies, such as reducing the use of single-use plastics, preventing littering, expanding wast...

Scientific Knowledge

There is still a lack of reliable data and short of scientific knowledge on marine plastic debris. Although we should take some action...

Voluntary Initiatives

Many private companies, communities, non-governmental organizations (NGOs), and others conduct various voluntary initiatives t...

Future Updates of Content

Possible topics for the RKC-MPD website:

- Volume of plastic leakage to the ocean, impacts of marine plastic debris on ecosystem
- Material flow of plastics, life cycle assessment of plastics and alternative material
- Countermeasures: ban and levy on single use plastics, promotion of recycling (extended producer responsibility, standard of recycled products etc.), collection of plastic debris from the environment, expansion of waste collection and disposal, etc.

Thank you!

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