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Ministry of the Environment

Japan's policies and measures on plastic pollution

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Plastic Litter on Japan's Coast and Rivers

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*Samples of drifted wastes

Tobishima, Sakata, Yamagata

Tsushima, Nagasaki

Plastic container

Fishing gear

Detergent container

Impacts of plastic Pollution

- **Impacts on Human Health**

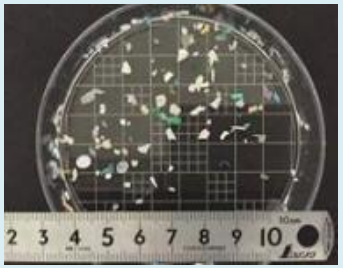
(Possible risk to human health; ingested by humans and wildlife; Chemical additives etc.)

- **Impacts on the environment**

(Marine, freshwater and terrestrial systems etc.)

- **Socioeconomic impacts**

(Waste management sector etc.)



Small plastic fragments
Source: Isobe lab, Kyusyu university

Looking back…

Rivers treated as waste dumps (1960s Japan)

Source: "100 Years of Sanitary Actions in Tokyo".

Looking back … 1960s Tokyo/Osaka

Fly-swatting were daily routines in Tokyo schools（1965）

Improvements in waste collection volumes and frequencies seen over the 1960s

Rivers treated as waste dumps
(1960s Osaka↑ and Tokyo→)

Source: “100 Years of Sanitary Actions in Tokyo” etc.

Policies against Marine Plastics Pollution in Japan

Legal / Policy Framework

- the Act on Promoting the Treatment of Marine Debris (2009, amended in 2018) → the Basic Policy on the Comprehensive and Effective Promotion of Measures Against Articles that Drift Ashore under the Act (2009, 2019) --- Promotion Council for Marine Litter Policy
- Resource Circulation Strategy for Plastics (2019)
- National Action Plan for Marine Plastic Letter (2019)
- **Act on Promotion of Resource Circulation for Plastics (2021 (enforced in 2022))**

Measures

Life cycle approach

Science based approach

3R (Reduce, Reuse, Recycle) + Renewable

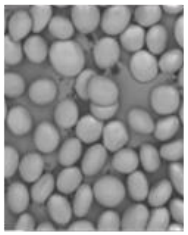
Environmentally friendly product design

Less material input
Easily disassembled
Use of recyclable materials

Intensified collection and appropriate treatment of waste plastics

Plastic waste recycling facility

Technological Innovation



ex. Development of cellulose-based microbeads

Support for efforts by stakehoders

ex. Marine litter pickup by the public

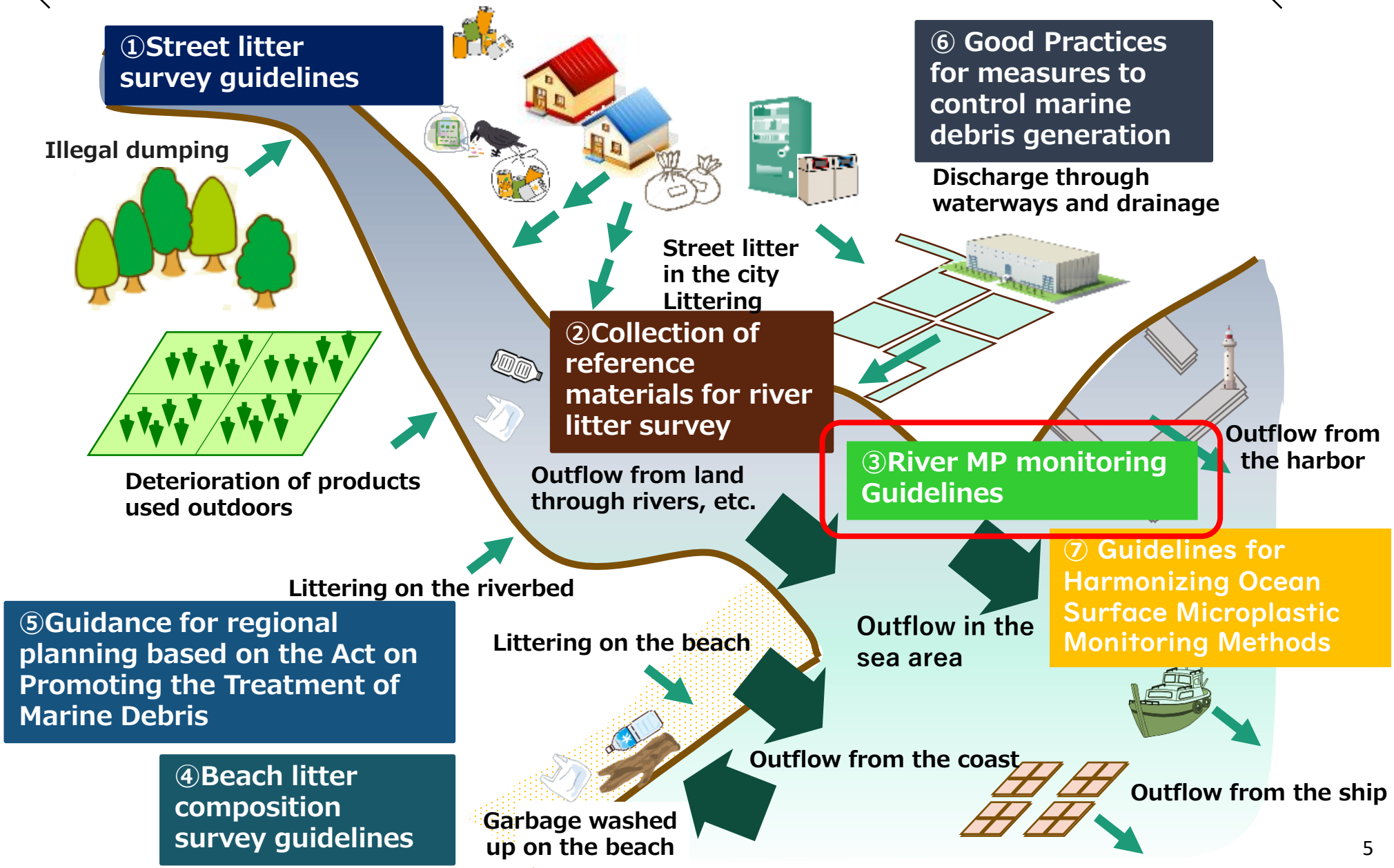
Accumulation of scientific knowledge

- Monitoring ★
- Inventory (estimation)
- Impact Assessment
- Technological Solution

Financing

- Public finance (ex. Subsidies for clean-up activities)
- Private finance etc..

MOE's survey/monitoring/clean-up guidelines related to plastics floating into Ocean



River MP monitoring Guidelines　(in Japan)

◆ **Target readers**

The staff of **local public agencies and other organizations** who conduct
the survey on the distribution of river microplastics, and cooperative researchers, research institutions, and business operators.

◆ **Target microplastics**

Plastic and fiber pieces smaller than 5 mm in rivers (assumption: nets with about 0.3 mm mesh openings are used to collect microplastics).
The plastics with a size of less than 1 mm = supplemental data

◆ **Purpose of survey**

Understanding **the distribution of microplastics in rivers** which are one part of
microplastics that flow out from land to sea.

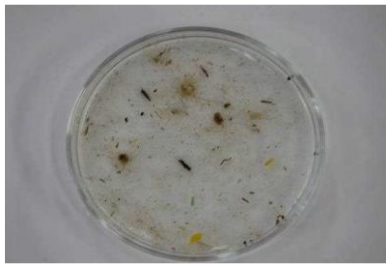
https://www.env.go.jp/en/water/marine_litter/guidelines/Guidelines_for_River_Microplastic_Monitoring_Methods_Marge.pdf

Cont. River MP monitoring Guidelines (in Japan)

Location selection
- Selection of survey location
- Selection of date and time of sur

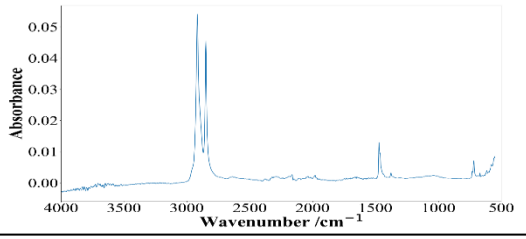
Sampling
- Sampling

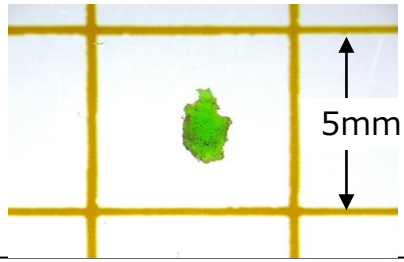
Pretreatment
- Filtration with net
- Oxidation
- Density separation



Sorting of candidate plastic parti
- Sorting of candidate plastic particles

Identification of microplastics
- Identification with FT-IR





Cont. River MP monitoring Guidelines (in Japan)

Excerpts: **2.3 Selection of survey location**

2.3.1 Survey location

1. The guidelines assume sampling with nets. The velocity of water flow is 0.3 m/s or more; the water depth is 50 cm.
2. Reference points for water quality or water level can be the survey location.
   For the entire length of a river = upper, middle, and lower reaches are necessary.
3. Locations where plastic waste or microplastics flow out into rivers are suitable.

Examples of suitable survey location:

- Locations close to Densely Inhabited District (DID)
- Locations where a large amount of plastic waste or microplastics is on river flood plains.
- Locations designated as reference points for environmental monitoring where biochemical oxygen demand (BOD) and suspended solids (SS) are high.
- Locations where tributaries or irrigation canals meet the mainstream.

Cont. River MP monitoring Guidelines (in Japan)

Excerpts: **2.4 Selection of date and time of survey**

1. As specified in the water quality survey procedure (in MoE water quality control No. 30, September 30, 1971), a day following a sunny streak should be chosen as a date of survey to ensure stable water qualities. Weathers at the survey location must be recorded for seven days before the survey.

2. When the survey location is in a tidal area, the sampling time is set in consideration of temporal variation in tide level and other factors. The period in which seawater does not run up and river flows from upstream to downstream (e.g. low tide period) is suitable.





(Photos from selecting survey location to sampling taken by MOEJ)

Global Outlook of Plastics Leakage to the Environment – Importance of International Cooperation -

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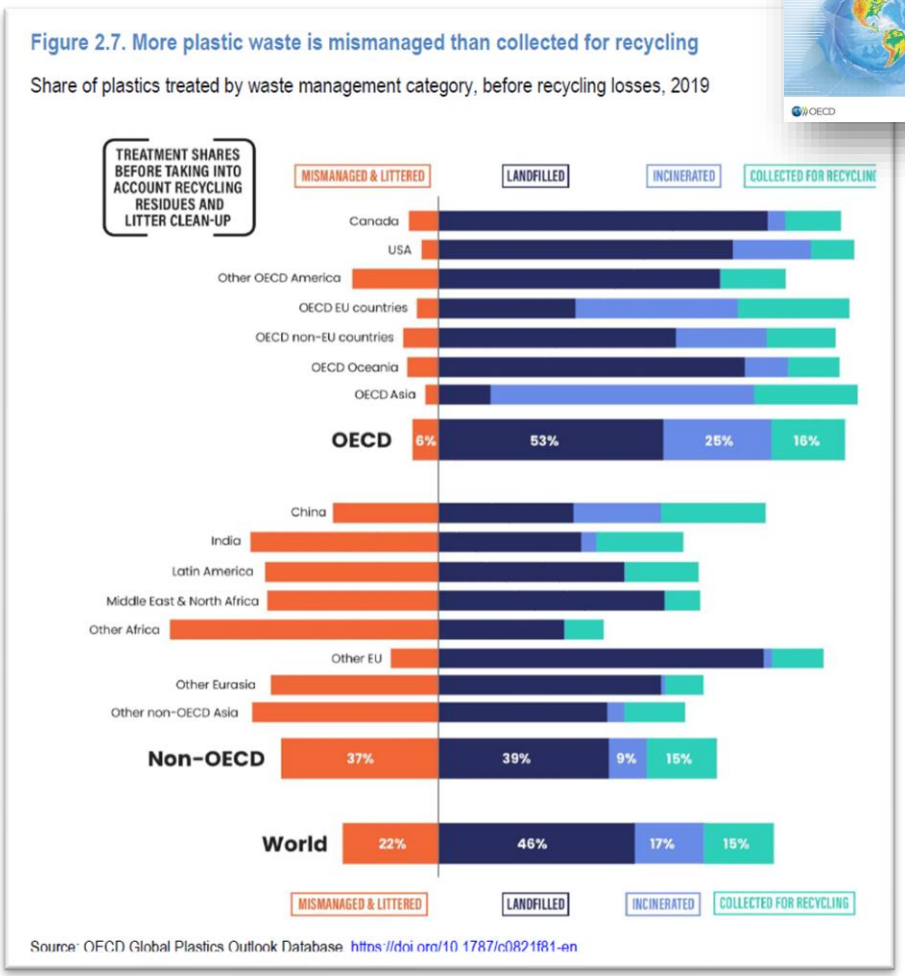
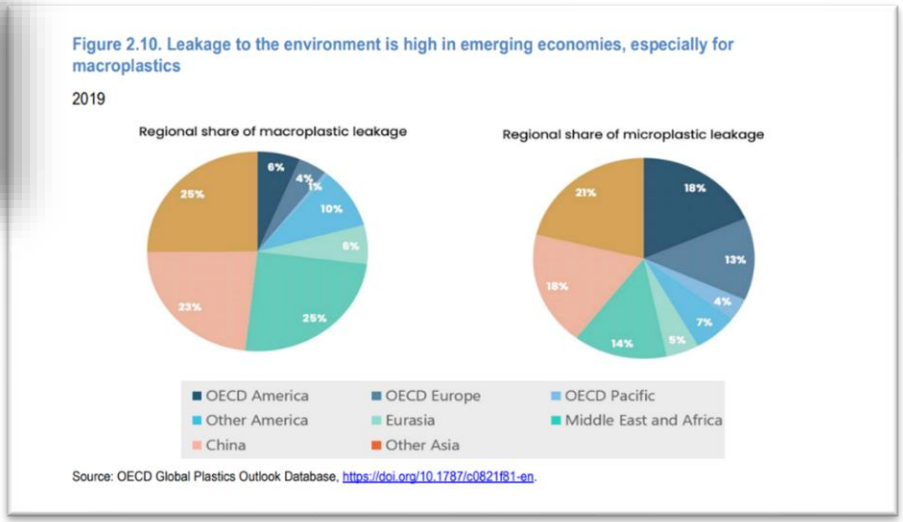
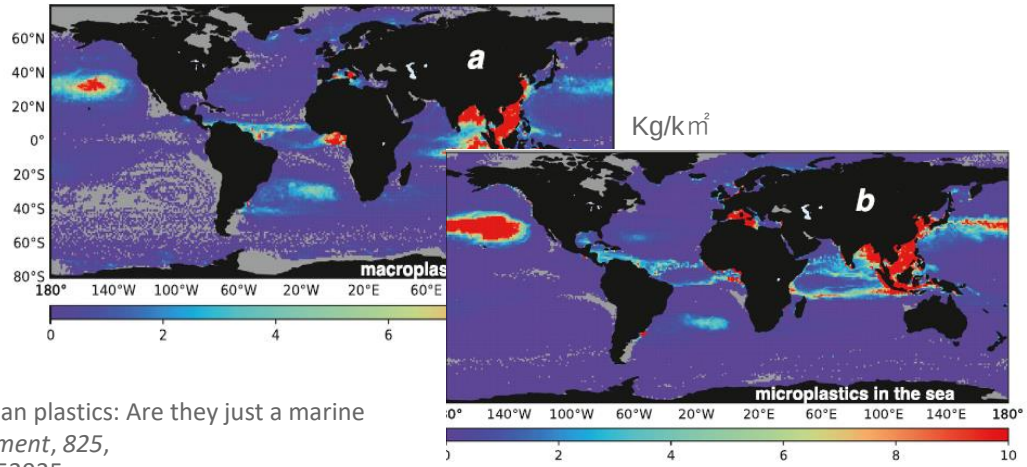
For example…





Ocean plastic abundance computed in the PTM (particle tracking model) with fragmentation and removal timescales of 3 years. (Average masses in 2017) (Isobe, A., & Iwasaki, S. (2022))



Isobe, A., & Iwasaki, S. (2022). The fate of missing ocean plastics: Are they just a marine environmental problem? *Science of the Total Environment*, *825*, [153935]. https://doi.org/10.1016/j.scitotenv.2022.153935

International: Development of guidelines for harmonized monitoring

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2019 Osaka Blue Ocean Vision

2019 G20 Implementation Framework

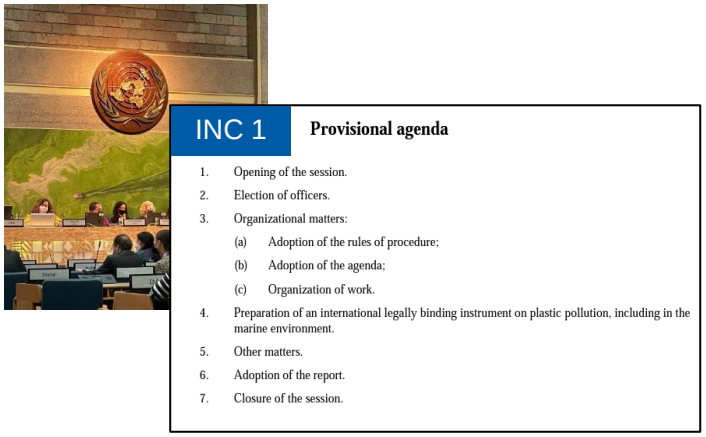
2022.2-3 UNEA 5.2

2022.11-12 INC 1

2024.12 INC 5

2019 G20 WS on Scientific Knowledge and Innovative Solutions

MOEJ	EU DG Environment	USEPA
• Harmonized monitoring and data compilation	• Sources, pathways, impacts and measures to combat plastic waste leakage	• Innovative solutions for reducing marine plastic litter



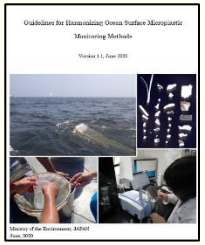
INC 1 **Provisional agenda**

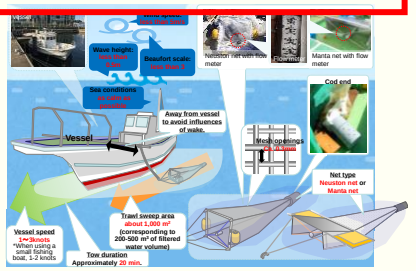
1. Opening of the session.
2. Election of officers.
3. Organizational matters:
   (a) Adoption of the rules of procedure;
   (b) Adoption of the agenda;
   (c) Organization of work.
4. Preparation of an international legally binding instrument on plastic pollution, including in the marine environment.
5. Other matters.
6. Adoption of the report.
7. Closure of the session.

First session of Intergovernmental Negotiating Committee to develop an international legally binding instrument on plastic pollution, including in the marine environment (unep.org)

2019 MOEJ published **"Guidelines for Harmonizing Ocean Surface Microplastic Monitoring Methods"** in 2019 and revised in 2020.

2022～ MOEJ is developing a **database for ocean surface microplastics.**





2022～ The next milestone is **Development of the harmonized guidelines on monitoring using the remote sensing technologies.**

(Repost) MOE's survey/monitoring/clean-up guidelines related to plastics floating into Ocean

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①Street litter survey guidelines

⑥ Good Practices for measures to control marine debris generation

Illegal dumping

Discharge through waterways and drainage

Street litter in the city
Littering

②Collection of reference materials for river litter survey

Deterioration of products used outdoors

Outflow from land through rivers, etc.

③River MP monitoring Guidelines

Outflow from the harbor

⑦ Guidelines for Harmonizing Ocean Surface Microplastic Monitoring Methods

Littering on the riverbed

⑤Guidance for regional planning based on the Act on Promoting the Treatment of Marine Debris

Littering on the beach

Outflow in the sea area

Outflow from the coast

Outflow from the ship

④Beach litter composition survey guidelines

Garbage washed up on the beach

Guidelines for Harmonizing Ocean Surface Microplastic Monitoring Methods

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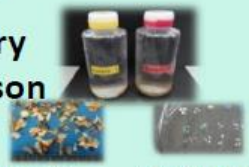
2016 → **2017** → **2018** → **2019** → **2020**

International expert meetings

An inter-laboratory comparison (ILC)

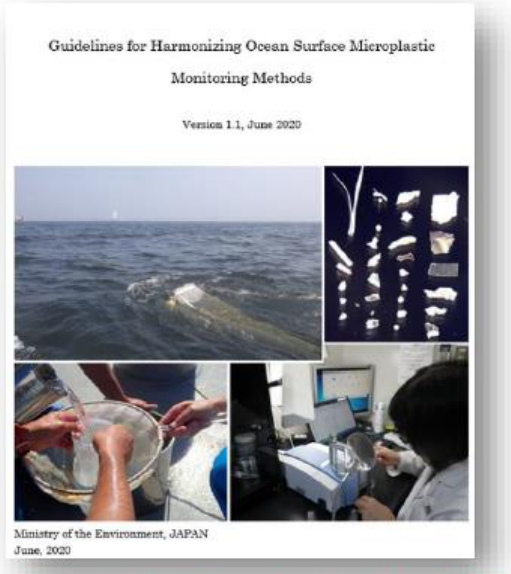


▲ Particles of natural objects ▲ Microplastics

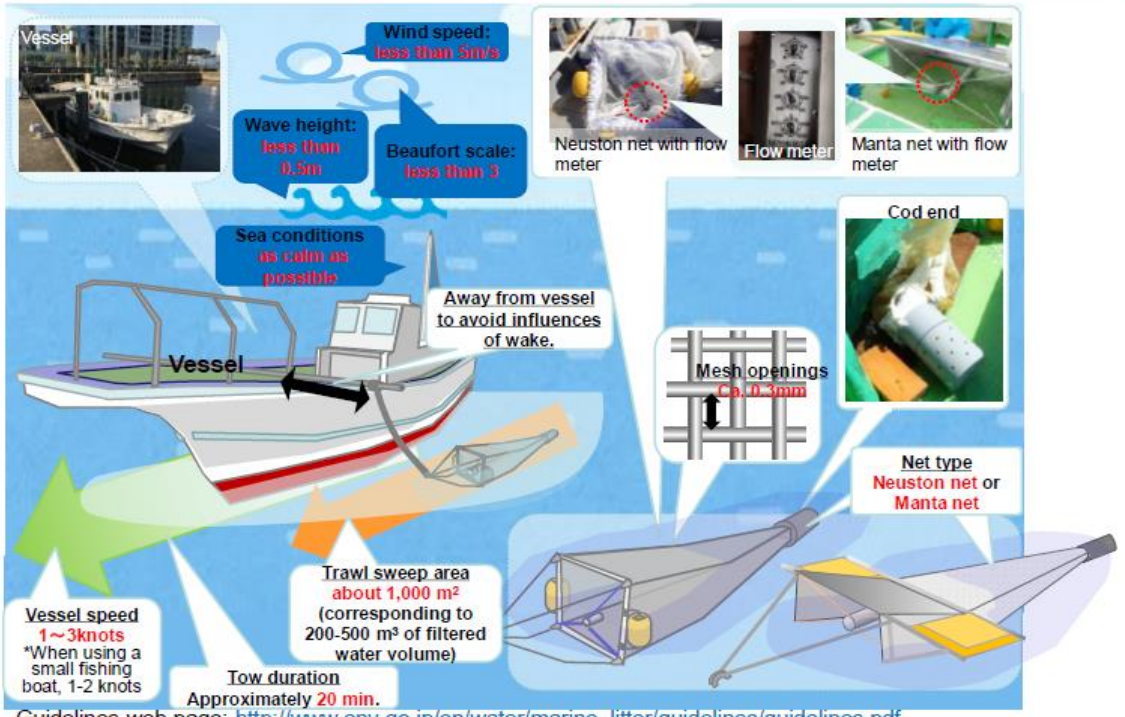
Comparison of sampling methods

Publication of the Guidelines

Revision



(published in 2019 and revised in 2020)



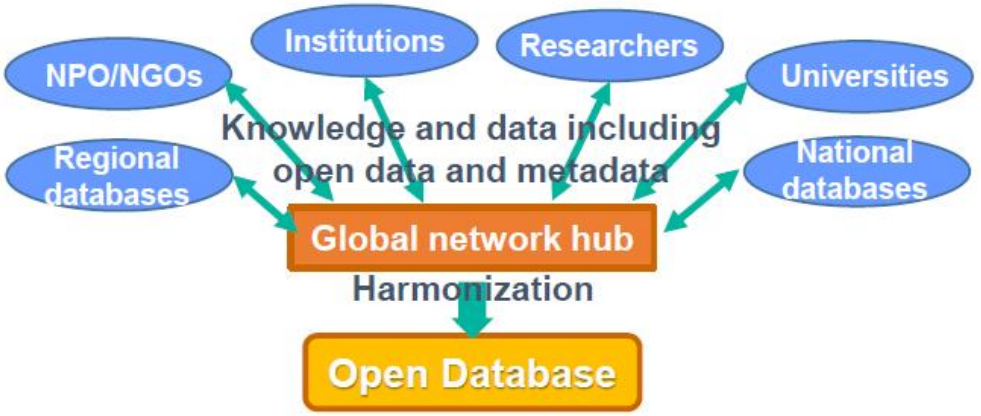
Guidelines web page: http://www.env.go.jp/en/water/marine_litter/guidelines/guidelines.pdf

Atlas of Ocean Surface Microplastics (AOMI)

"aomi" means "blueness" and "blue ocean" in Japanese

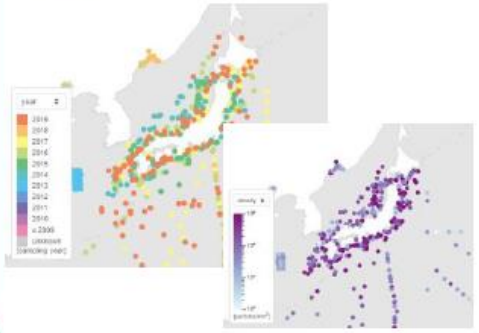
- **Bring together** monitoring data of ocean surface microplastics
- **Classify** the data for better comparability in line with the Guidelines
- **Visualize** the distribution and abundance on 2D maps
- **Open** the information to the public

  Assumed users: researchers, policy-makers, general public



Images of 2D maps to be provided by the Open Database

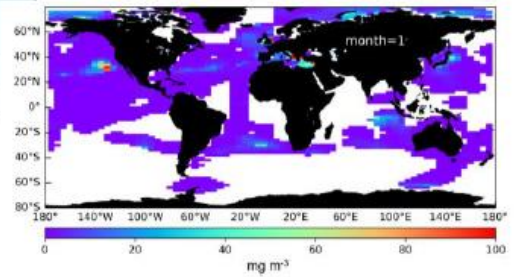
- Survey sites



- Density of ocean surface microplastics

Simple average per grid

Use of calibrated data



- Survey frequency

Japan is developing a database for ocean surface microplastics which will be launched in JFY2023.

The harmonized guidelines on Marine Litters monitoring including plastics in the environment using the remote sensing technologies

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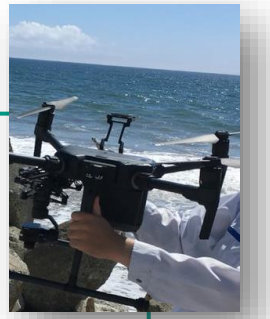
Purpose of the remote sensing monitoring guidelines



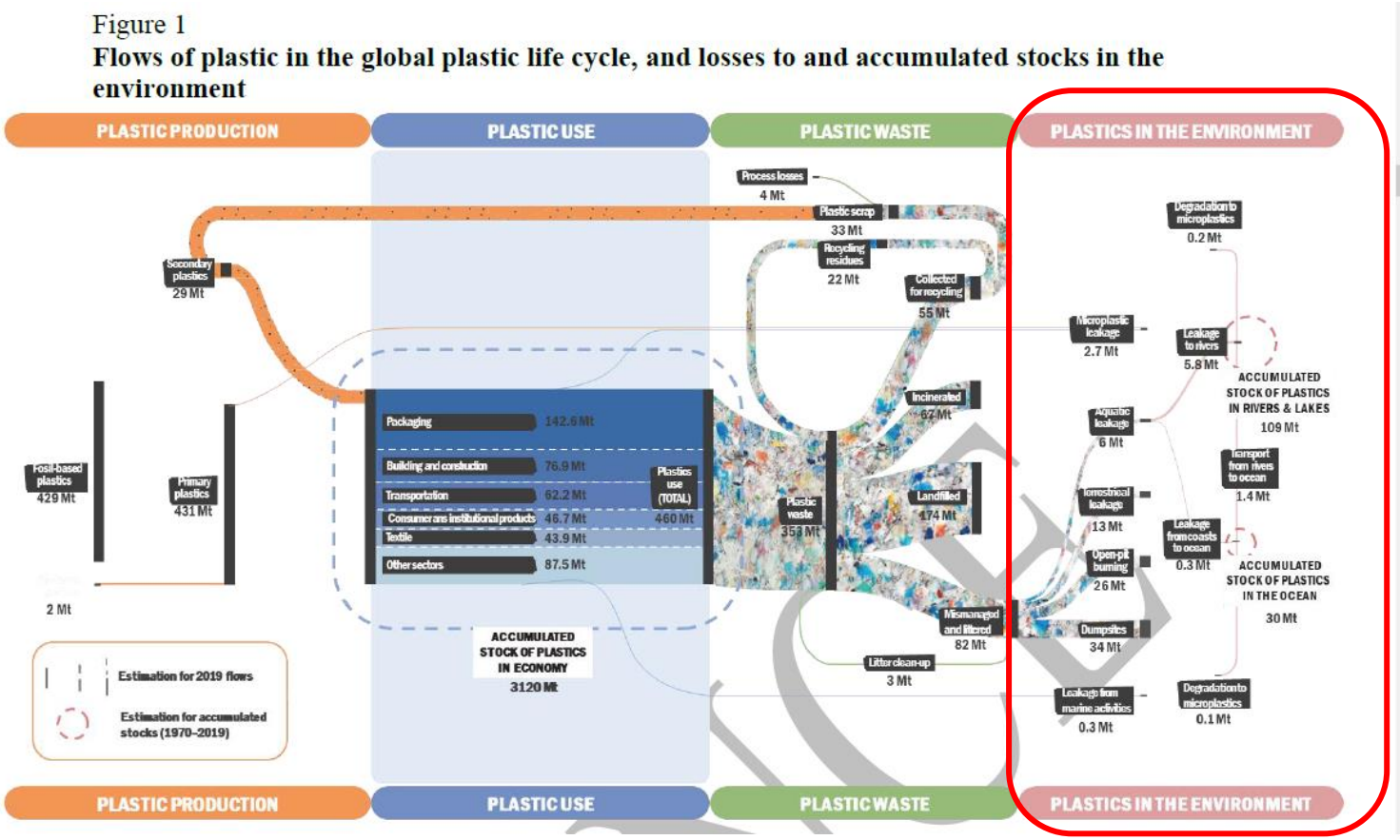
- Enhancing more comprehensive coverage and effectiveness of the monitoring of marine debris including plastic litter by using the **remote sensing technologies** through knowledge sharing and harmonization of the methodologies

- Expert meetings and relate activities are planned through 2022 to 2024.

Expected outcomes from the Expert Meetings

- **International guidelines** including monitoring method of beach litter **using UAV**, as the 1st edition of the guidelines
- **Review paper (by academics)** on the monitoring methodologies of marine debris including plastic litter from land as well as marine sources, using the **remote sensing technologies**

Monitoring and Estimation --- Inventory of plastic leakage into the environment



Source: UNEP INC1 document (original data is from OECD Global Plastic Outlook 2022)

- MOEJ is working on Inventory of plastic leakage into the environment.
  - Estimation from Material flow with macro data OR Monitoring ?