



Address Marine Litter in NOWPAP Region

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UNEP Northwest Pacific Action Plan (NOWPAP)

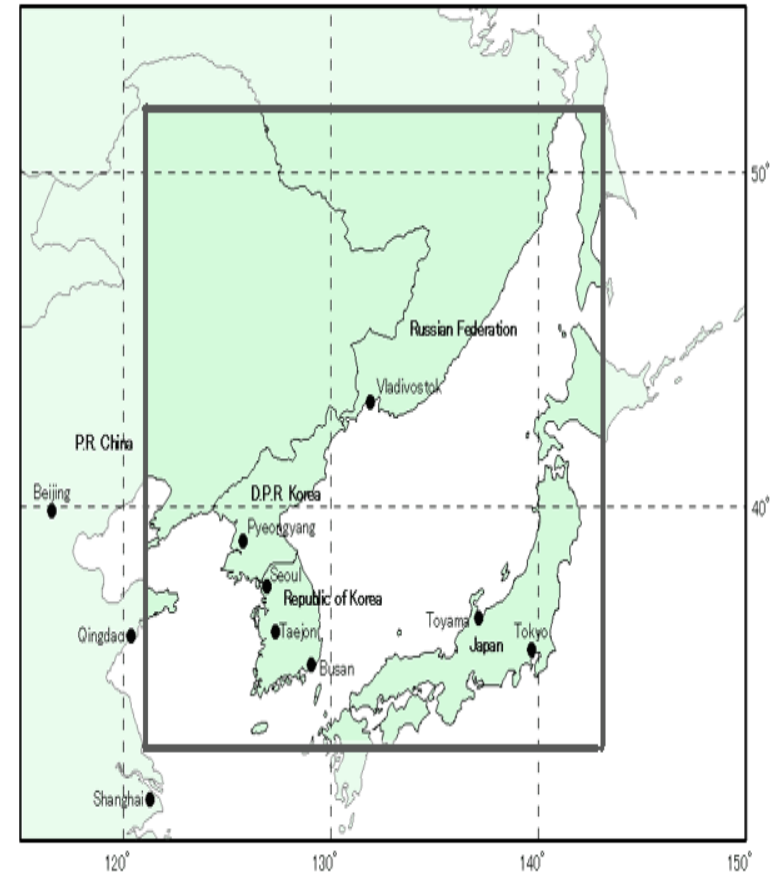
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www.unenvironment.org/nowpap



UNEP Northwest Pacific Action Plan (NOWPAP)

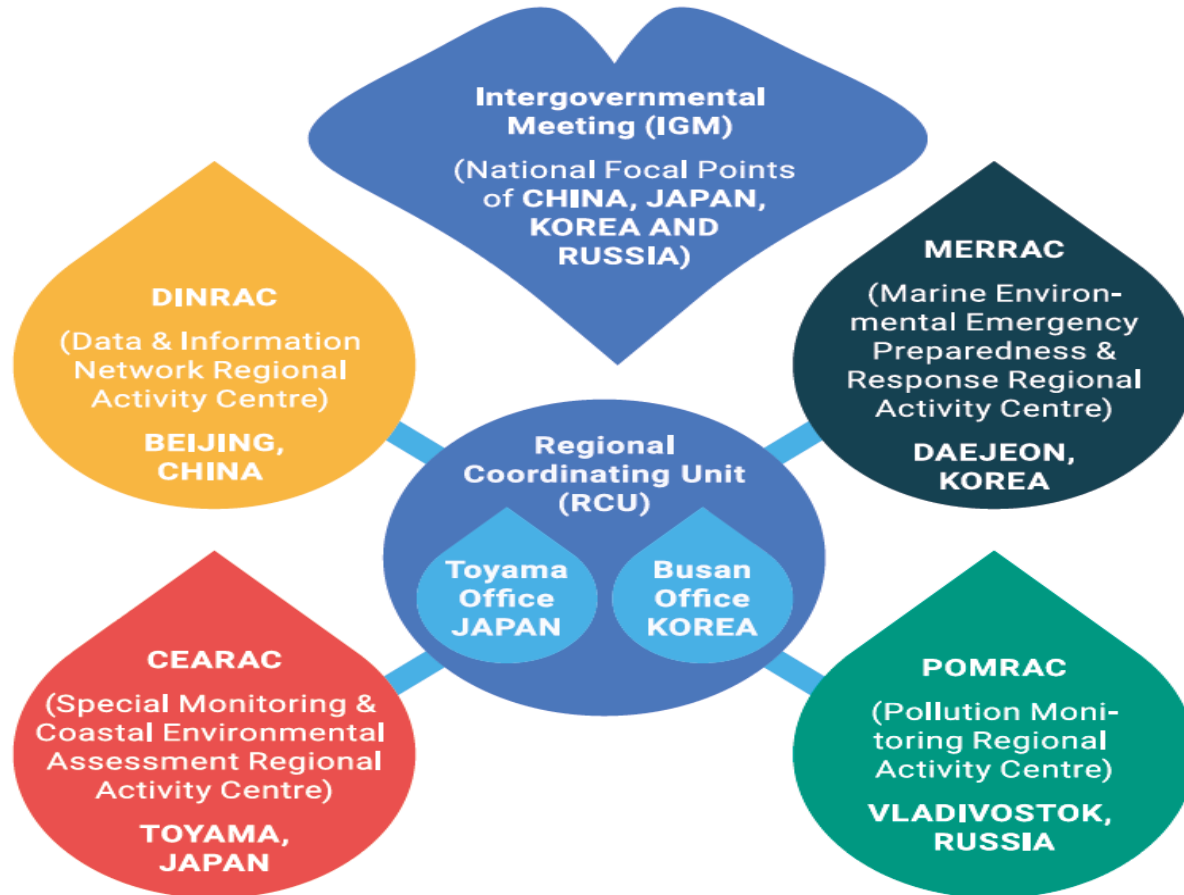
- Established in 1994
- Part of UN Environment Regional Seas Programme
- Member states: China, Japan, Korea, Russia
- Overall goal: Protection of the marine and coastal environment in the region



NOWPAP geographic coverage



NOWPAP Structure

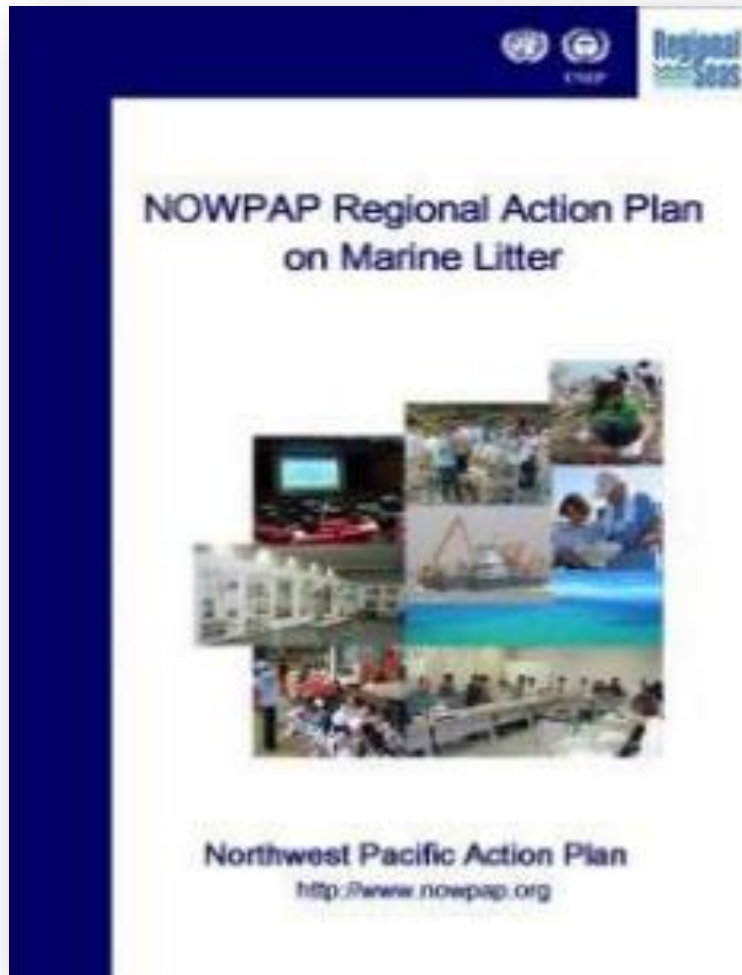




NOWPAP
Northwest Pacific Action Plan



Regional
Seas



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NOWPAP Mechanism



**Marine Litter
National Focal
Points**

NGOs

CEARAC

-Special Monitoring and Coastal Assessment

DINRAC

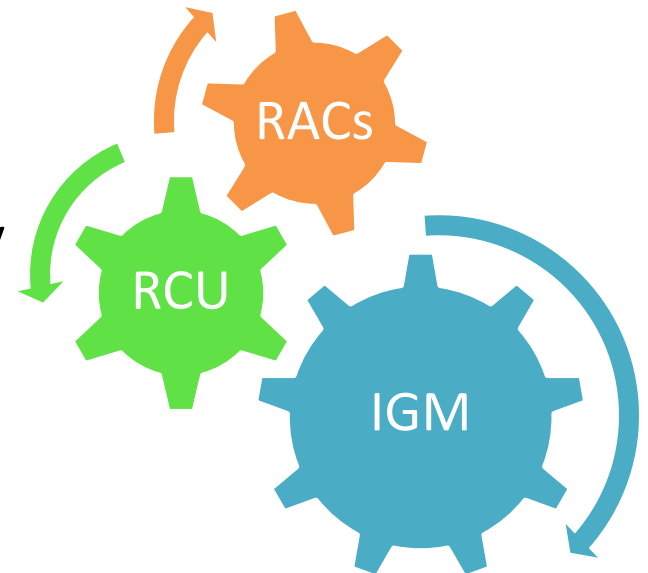
- Data and Information

MERRAC

- Marine Environment Emergency Preparedness and Response

POMRAC

- Pollution Monitoring





Two main issues of Marine Litter

- Wise management of solid waste on land and at sea
- Change in the attitude and behavior of people



International Workshops



**International ML Workshop
Toyama, Japan, 2005**



**1st NOWPAP ML Workshop
Incheon, Korea, 2006**



**2016 NOWPAP ML Workshop
Vladivostok, Russia**



**2nd NOWPAP ML Workshop
Toyama, Japan, 2007**



**3rd NOWPAP ML Workshop
Dalian, China, 2008**



**2017 NOWPAP ML Workshop
Vladivostok, Russia**

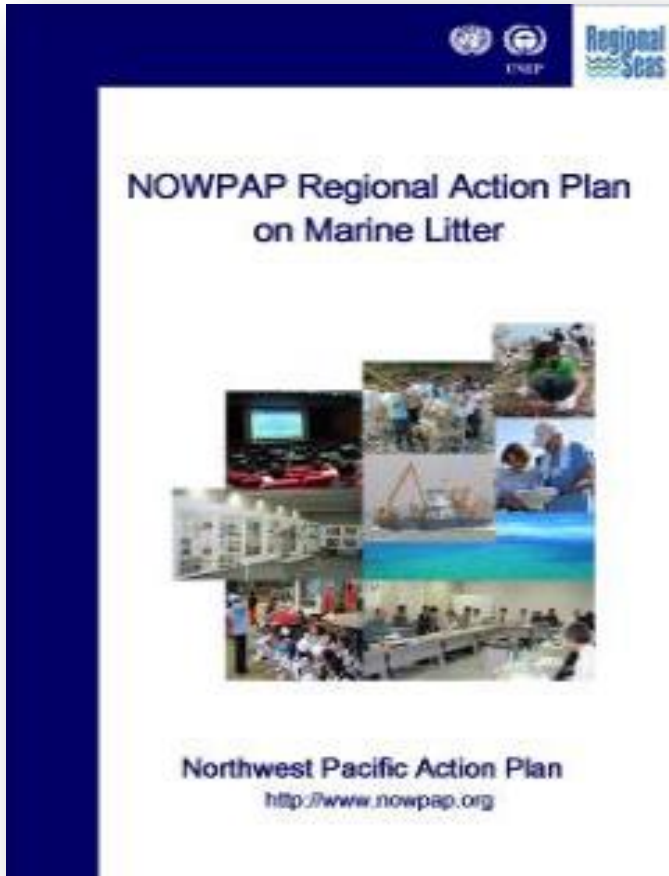


NOWPAP-TEMM Marine Litter Management Workshop, 2018, Busan





NOWPAP Regional Action Plan on Marine Litter



3 key elements

Prevent ML
input

Monitoring
quantities and
distribution
of ML

Remove
existing ML

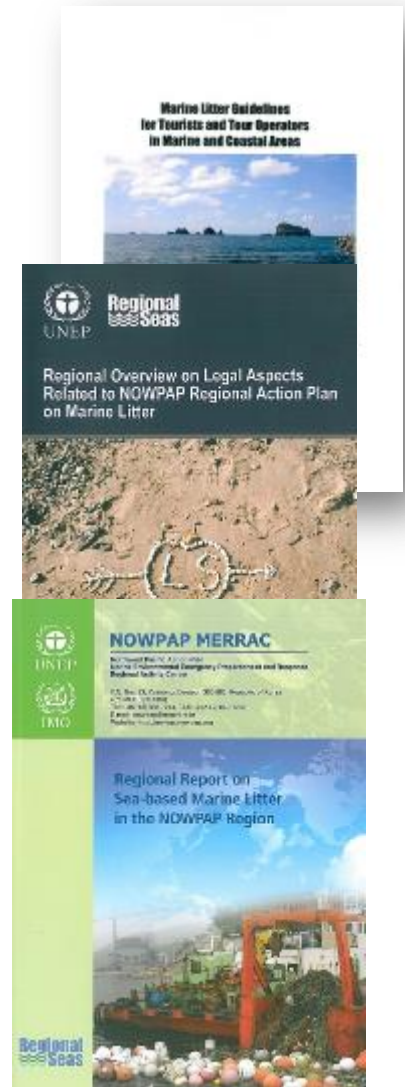
Approved in March 2008



1. Prevention of Marine Litter Input

CEARAC:

- Updated “Marine litter **guidelines** for tourists and tour operators in marine and coastal areas” (2011)
- Best practices** for preventing marine litter from land-based sources (2013)



DINRAC:

- Regional **Overview** with updated information on legal and administrative arrangements (2010)

MERRAC:

- Regional **report** on negative impacts of Marine Litter (2013)
- Best practices** of marine litter management in fisheries, aquaculture and shipping sectors (2014)



1. Prevention of Marine Litter Input (2)

**BEST PRACTICES OF
MARINE LITTER MANAGEMENT IN
FISHERIES, AQUACULTURE AND
SHIPPING SECTORS
IN THE NOWPAP REGION**



**Best practices for prevention
of marine litter input from
land-based sources in the
NOWPAP region**

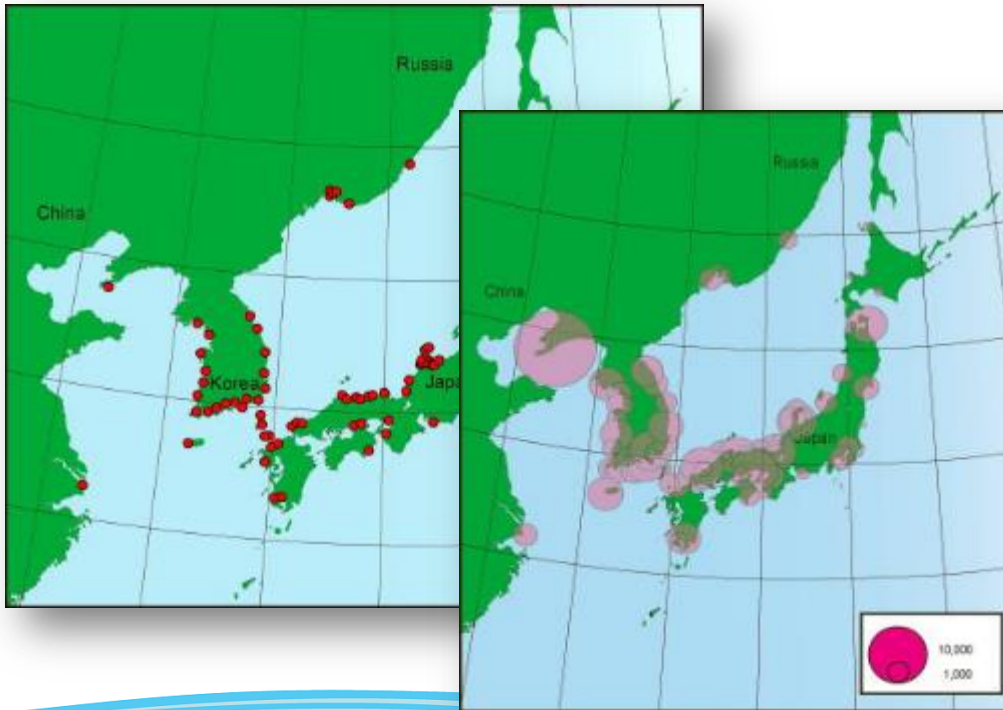




2. Monitoring of ML quantities and distribution

- Marine litter monitoring (national)

➤ Monitoring data since 2003 are available online!



<http://dinrac.nowpap.org/our-work/marine-litter/monitoring-datasheets/>



2. Monitoring of ML quantities and distribution

CEARAC: Compiled and harmonized monitoring data on Marine Litter on beaches since 2003

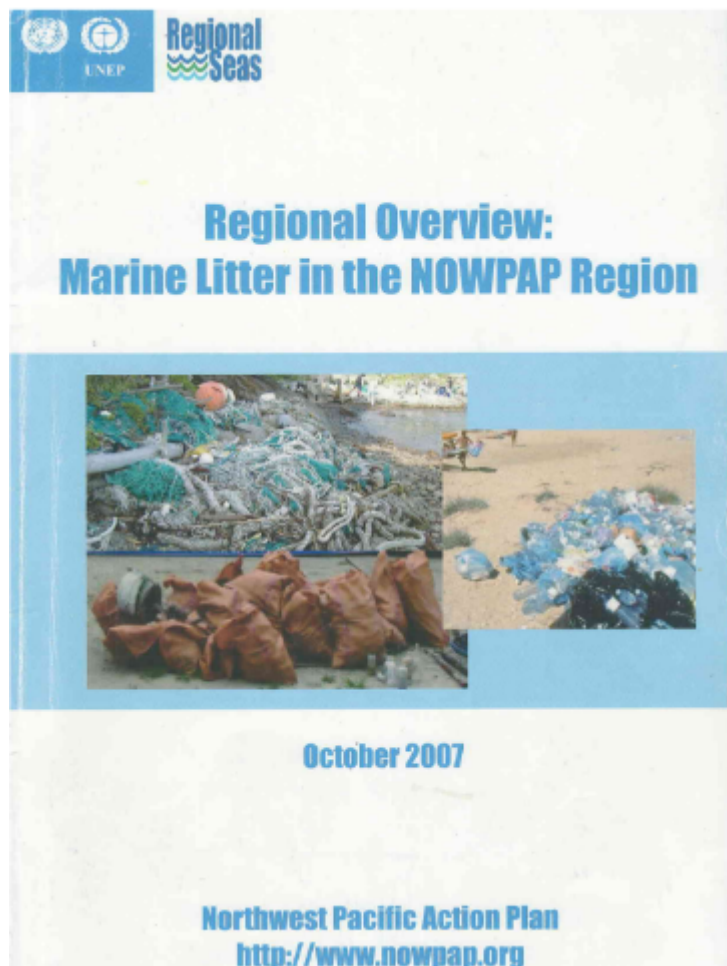
DINRAC: Added to its ML DB monitoring results since 2003 provided by the surveys conducted in China, Japan, Korea and Russia

MERRAC: Published “Understanding of Floating Marine Litter Distribution and Impacts in the NOWPAP Region” 2016; Review and Analysis of Existing Floating Marine Litter Prediction Models in the NOWPAP region 2016;

POMRAC: Research on micro-plastics content and migration in the Peter the Great Gulf.

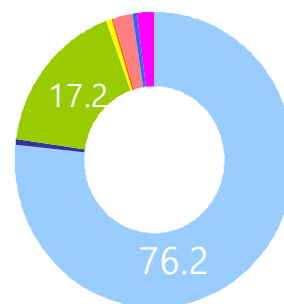


Regional Overview on Marine Litter (2007)

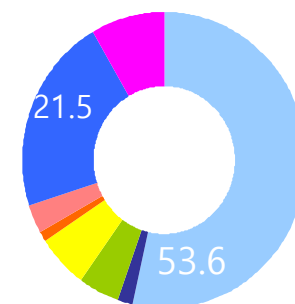


- Others
- Metal
- Glass/Ceram
- Cloth
- Paper
- Polystyrene
- Rubber
- Plastic

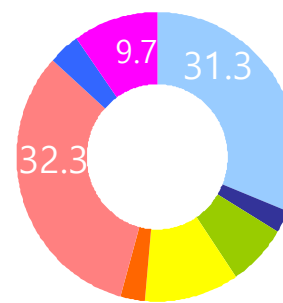
% in number



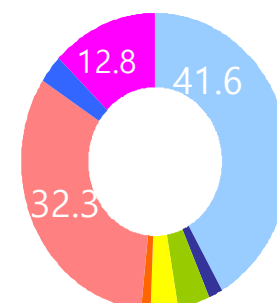
Japan



Korea



China




Russia



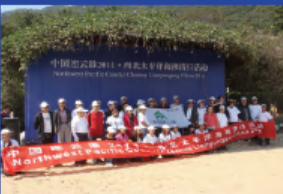
Source: NPEC (2002-2005)



Regional Overview on Marine Litter (2011)

 **Regional Seas**

Marine Litter in the NOWPAP Region



November 2011

Northwest Pacific Action Plan
<http://www.nowpap.org>

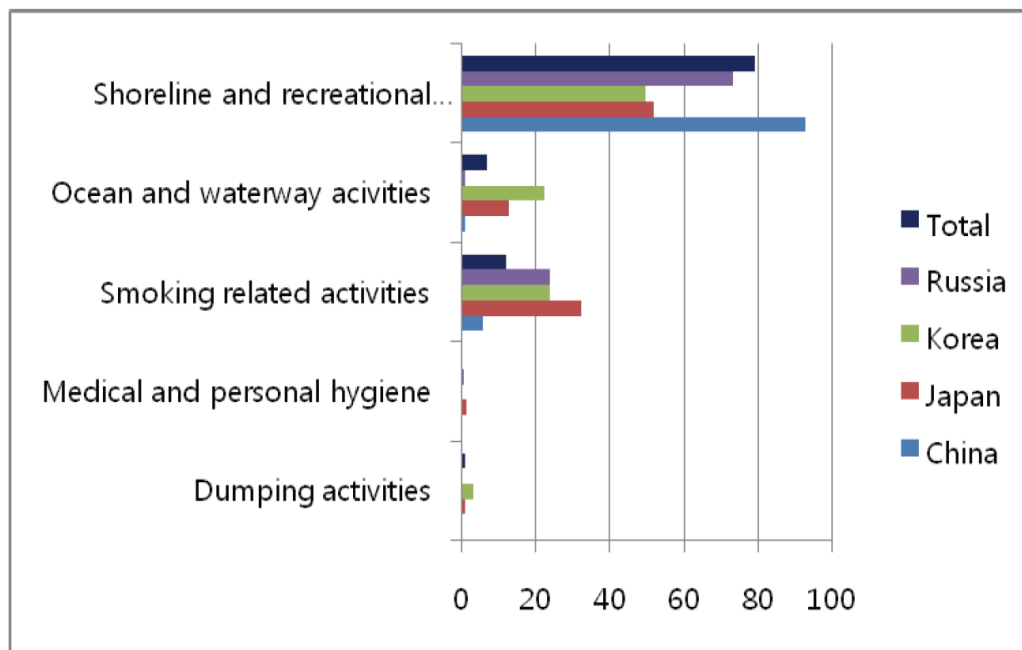


Figure 5. Sources of marine litter in NOWPAP member states in percentage (2010 data from Ocean Conservancy)



The Third Regional Overview on Marine Litter will be published by the end of 2019

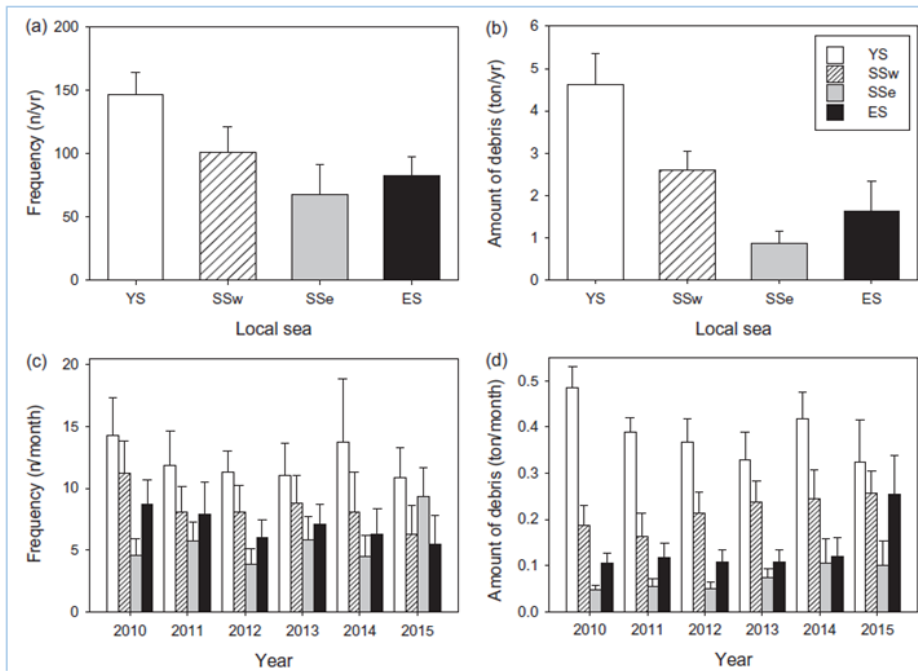


Figure. Regional and temporal trends of the cases (Adapted from Hong et al. (2017))



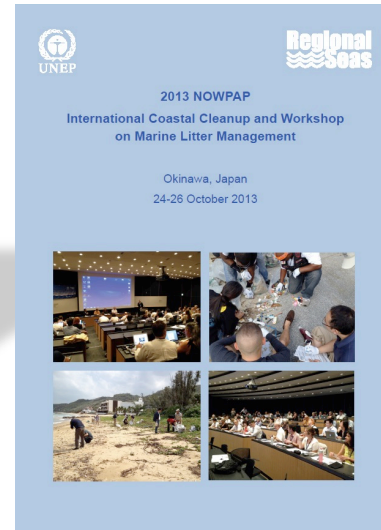
3. Removing existing ML and its disposal

With focus on national actions on:

- Beach Cleanup Campaigns
- Removal of existing marine litter
- Research activities related to marine litter



**Boryeong Korea
2014**



**Okinawa Japan
2013**



Organization of International Coastal Clean-up (ICC) Campaigns since 2006

Jeju, Korea (2010)

Hirado, Japan (2010)



Yamagata, Japan, 2006

Lianyungang, China (2011)

Rizhao, China 2007



Vladivostok, Russia 2012

Okinawa, Japan (2013)



Boryeong, Korea (2014)

Yantai, China (2015)

Vladivostok, Russia 2016

Toyama, Japan 2017

Busan, Korea 2018





Organization of International Coastal Clean-up (ICC) Campaign 2018, Busan





Organization of International Coastal Clean-up (ICC) Campaign 2018, Busan





Organization of International Coastal Clean-up (ICC) Campaign 2018, Busan





National efforts - China

Restrictions to the free use of plastic bags in markets (from June 2008)

- No free use of thin plastic bags
- It is estimated that 40 billion plastic bags are reduced per year





National efforts - China

An example: reuse of discarded fishing nets

Xijidang is a famous village in Lianyungang for the reuse of discarded fishing nets. Among the 40,000 tons nets discarded in China, about 35,000 tons nets became useful goods in this village.





Subsidy Project for Cleaning up Coast in Japan



Subsidy Project

to Local government for cleaning up coast, reducing generation etc.

National Budget



2009 - 2012	About	54 million US\$
2013 - 2014	About	91 million US\$
2015	About	26 million US\$
2016	About	27 million US\$

Source:
MOEJ

US\$1= JY110

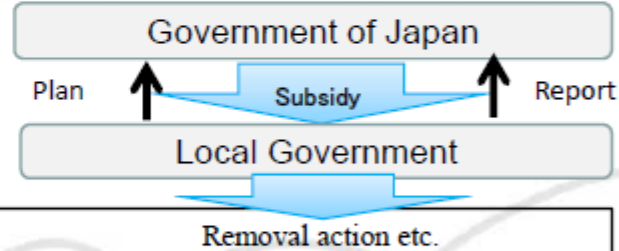
Subsidy money can be used for

Cleaning up coast

Reducing generation

From 2015, removing **drifting** and **sea bed** **litters** is added to the menu of subsidy.

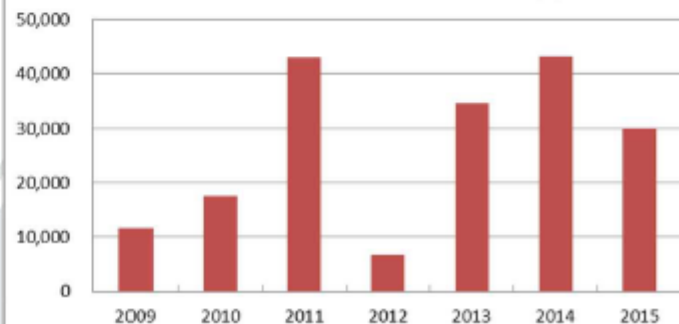
Flow of Subsidy



Result of Subsidy Project by Government of Japan

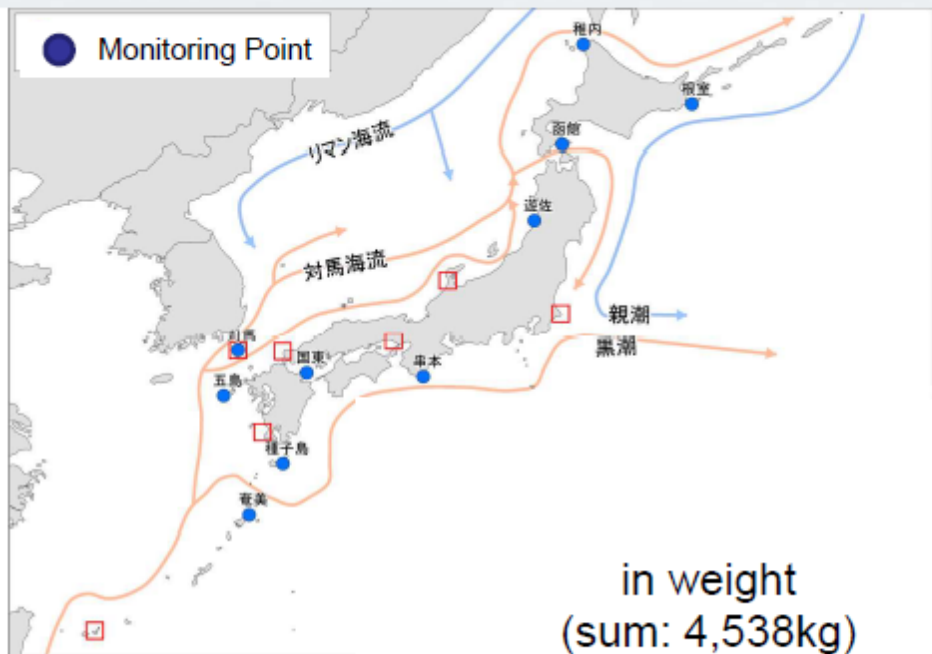
Fiscal year	2009	2010	2011	2012	2013	2014	2015	2016
Budget (Thousand US\$)	54,182				90,800		25,910	27,272
Amount of removed litters (t)	11,760	17,584	43,058	6,617	34,610	43,259	30,611	31,141

(t) Amount of removed litters (t)

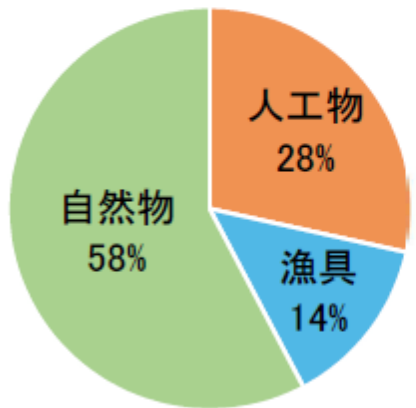




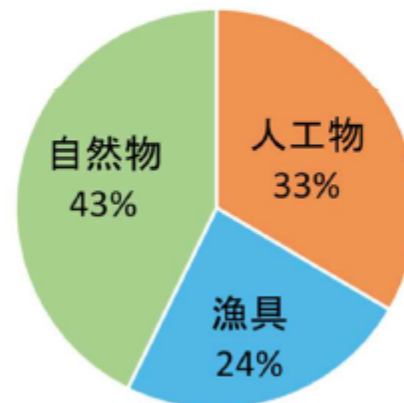
Result of the Monitoring Marine Litter on the Coast



2016 result : type of marine litter



in volume
(sum: 21,019liters)



- Artifact
- Natural product
- Fishing gear

Source:
MOEJ



A Result of Survey of Actual Situation of Microplastics by MoE



Offshore Survey for drifting microplastic by vessel.

Ministry of the Environment carried out offshore survey for drifting debris in collaboration with Tokyo University of Marine Science and Technology on July to October in 2015. The purpose of this survey is to grasp the actual condition of drifted microplastics.



Umitaka-maru

東京海洋大学

Drifting microplastics around Japan

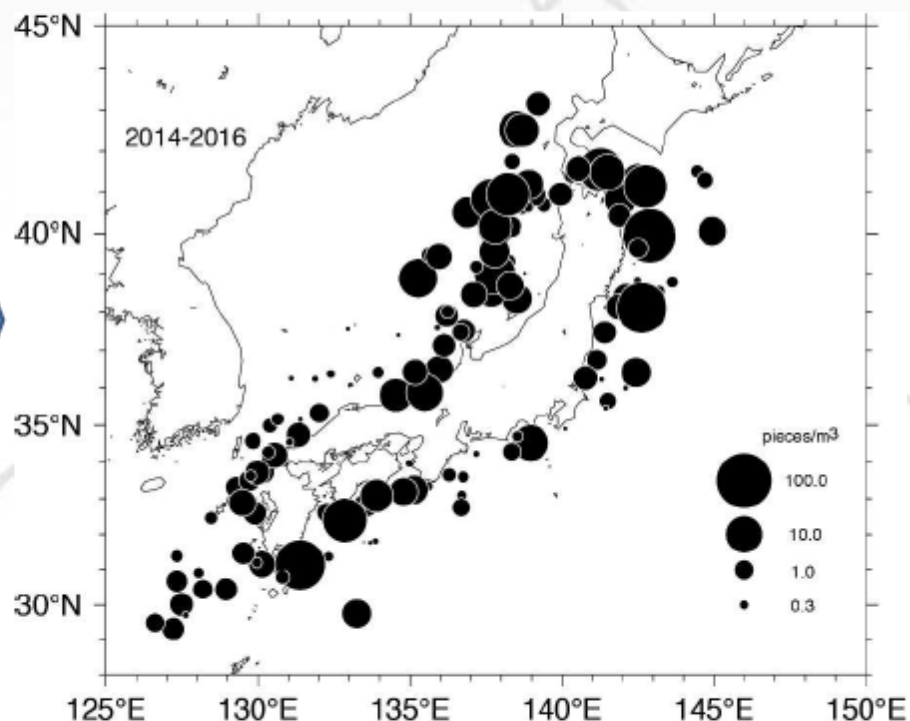


Plankton net



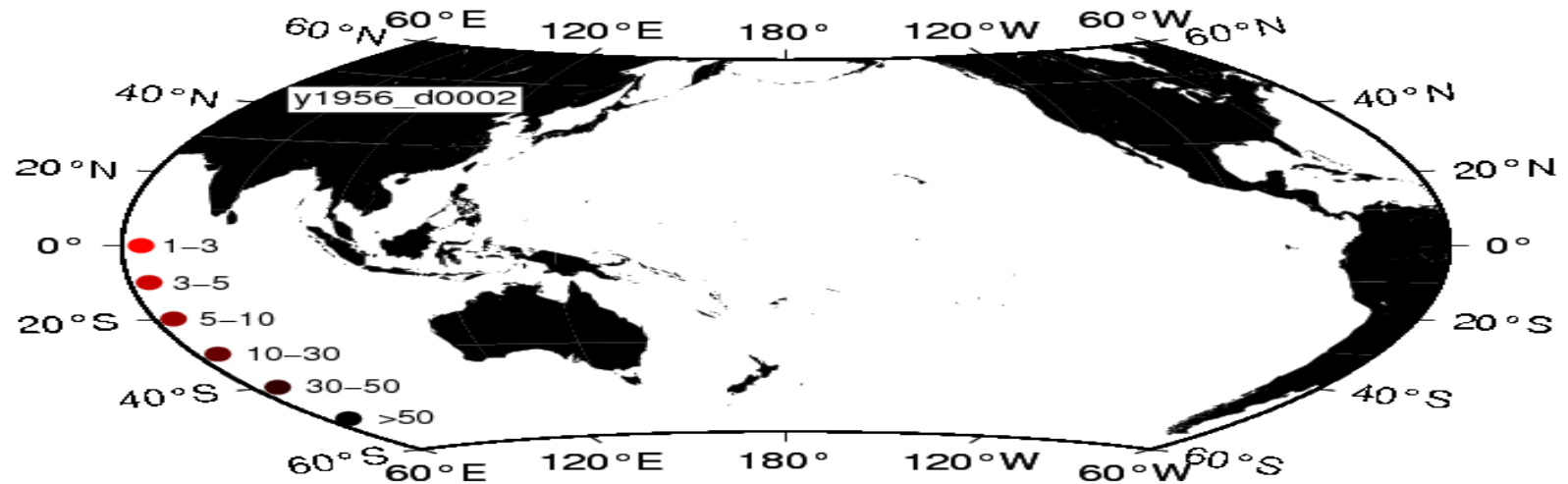
Pieces of microplastic

Distribution map of the microplastics density around Japan from FY2014 to FY2016



Numerical particle tracking model for predicting microplastic abundance in the Pacific after 50 years

Modeled particles are carried by **surface ocean currents** provided by the HYCOM product (ocean re-analysis data), and **Stokes drift (wave-induced surface currents)** computed using sea surface winds provided by ASCAT satellite data. The University of Miami Wave Model was used for the wave & Stokes drift computations.



Credit: Isobe et al

1: East Asia (Japan, China, Korea, ...), 2: Southeast Asia 3: Western equatorial Pacific, 4: Oceania, 5+6+7: North America, 8: Central America 9: Eastern equatorial Pacific 10+11+12: South America



Status of Marine Litter in Korea

- **176,000 tons** of marine litter generated annually
- By cause: land-based, **118,000 tons** (67%); sea-based, **58,000 tons** (33%)
- * Inflow of fallen trees due to natural disasters: **86,000 tons** (48%);
Fishing gear: **44,000 tons** (25%)
- ✓ Amount of marine litter: **152,000 tons** (shoreline, 12,000 tons;
 - deposited, 137,000 tons; floating 2,000 tons)
- Amount collected annually: **83,000 tons**;
 - Cost of collection: KRW **60 billion** (not including projects led by local governments)
- Statistically, the amount noted above does not include the amount of marine litter collected by private companies, uncollected litter, naturally decomposed, and so on. (Source: KOEM)



Efficient Collection System

- **Buy Back Program**--was implemented by the Government of Korea since 2003.
- 12 major ports in Korea and the funds were from the central government (60%) and the local government (40%)
- 3 types : general fishing nets and ropes; fishing traps; and abandoned or lost polystyrene





Buy Back Program

- Fishing nets or ropes at USD 3.8 per sack (40 L) and lost polystyrene by USD 0.24 per kg. USD 0.23 (KRW 250) per trap.
- The total amount purchased between 2009 and 2012 reached 30,959 tons.
- The total investments combined by the central and local governments reached USD 20 million
- The removal cost during this period was USD 678 per ton, while, the removal cost in 2003-2007 was USD 714 per ton.
- “Illegal actions of fishermen” where mixing the lifted marine litter with general garbage
- Increase the number of the collection sites from 60 in 2014 to 80 in 2018





Marine Litter Collection by Floating Receptacles

- minimization of sea-based marine litter discharge including solid waste (e.g. wires and tires), lost cargo, and ALDFG in Korea



Gornostay bay landfill (dump)



The year of trash dump opening

- 1967

The total area

- 160 000 m²

The area covered with garbage

- 85 000 m²

Waste volume as of 2010

- 1 800 000 m³

Gornostay bay landfill (dump)

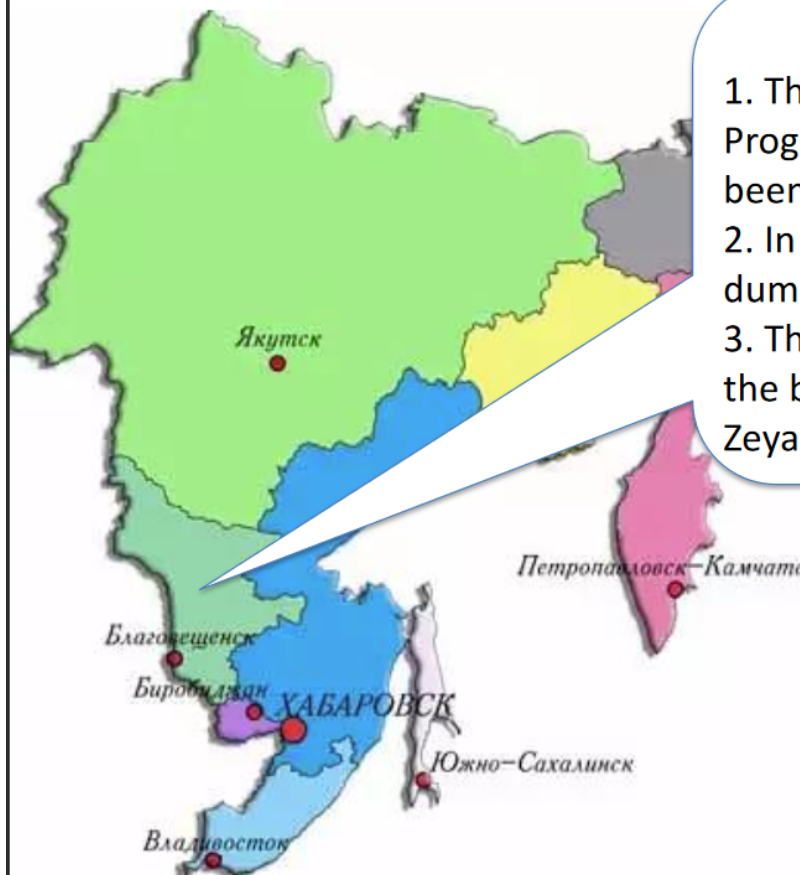
- **back walls built**
- **heat sources have been extinguished,**
- bank slope has been fixed,
- the gas outlet,
- storm water drainage
- observation holes system





Status of Marine Litter in Russia

Year of ecology on the Far East of RF



Amur region

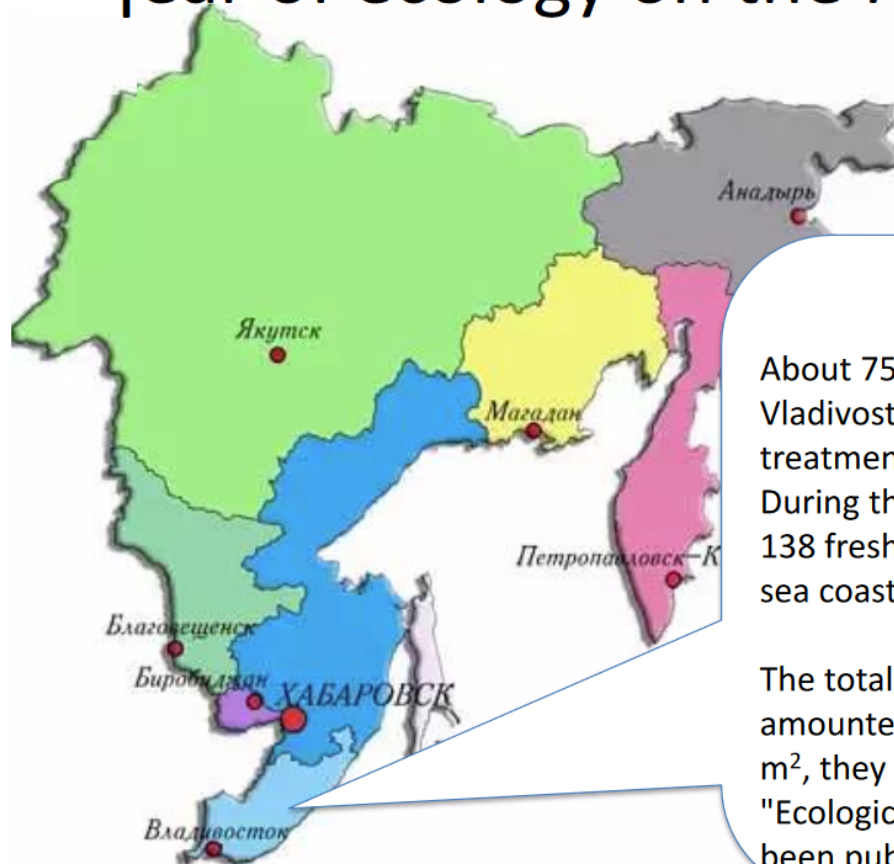
1. The Regional Waste Management Program for the period 2018-2028 has been approved.
2. In 2017 64 places of solid waste dumps were liquidated
3. Thanks to the action "Clean Coast", the banks of the rivers Tynda, Amur and Zeya are cleaned up





Status of Marine Litter in Russia

year of ecology on the Far East of RF



Primorsky Krai

About 75% of the sewage of Vladivostok goes to modern sewage treatment plants.

During the action "Water of Russia", 138 freshwater objects and 18 km of sea coasts of the shore were cleaned.

The total area of the cleaned territories amounted to more than 350 thousand m², they collected 1,000 m³ of garbage. "Ecological" report for 2017 has not yet been published



Status of Marine Litter in Russia



NGO initiatives

JEAN

Japan Environmental Action Network

<http://www.jean.jp/en/>

OSEAN

Our Sea of East Asia (Korea)
<http://cafe.naver.com/osean>

제목	작성일자	조회
공지 해양쓰레기 활동에 기업이 참여하는 4가지 방법 [3]	Sunny Hong 2015.04.15	26
공지 (주)하이드로코어의 후원에 깊이 감사 드립니다.	장용창 2015.04.14	13
공지 오션소개-기업과 함께 하는 해양환경보호(20150301)	Sunny Hong 2015.03.23	13
공지 회원가입 신청 및 기부금 후원 계좌 안내	산이아빠 2009.10.27	157
공지 Inviting authors to NGOs journal on marine debris (Guidelines attached)	장용창 2014.03.26	9
1587 Marine Litter News (2014) Vol 5(2) from East Asia Civil Forum on Marine Litter	홍영이미정 2014.12.11	24
1544 AMETEC Protocol on Beach Debris Monitoring: 2014 Version	장용창 2014.10.27	5
1543 AMETEC Protocol on Beach Debris Monitoring: 2013 Version	장용창 2014.10.27	4
1504 Marine Debris Impact on wildlife: a pdf book of cases with pictures	장용창 2014.09.04	5
1503 Marine Litter Activity Book for Children	장용창 2014.09.04	4
1416 Marine Litter News (2014) Vol 5(1) from East Asia Civil Forum on Marine Litter	Deepwell 2014.06.09	10
1403 PDF file of a Leaflet Please save Black-faced Spoonbills from fishing debris	장용창 2014.05.22	9
1341 Inviting authors to NGOs journal on marine debris (Guidelines attached)	장용창 2014.03.26	9
1298 Marine Litter News (2013) Vol 4(2) from East Asia Civil Forum on Marine Litter	Deepwell 2014.02.16	8
1034 Marine Litter News 4(1) June 2013.	Sunny Hong 2013.07.19	20

NGO initiatives



**National Report: The Role of China's Environmental
Non-Governmental Organizations in Marine Litter Control**

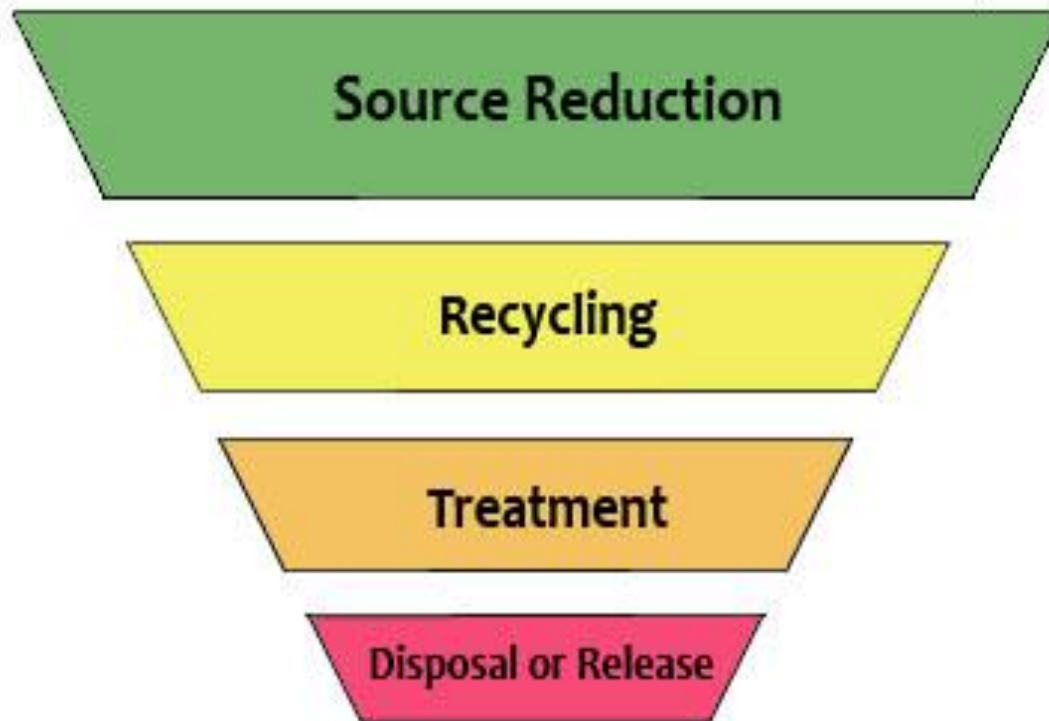
December 2013





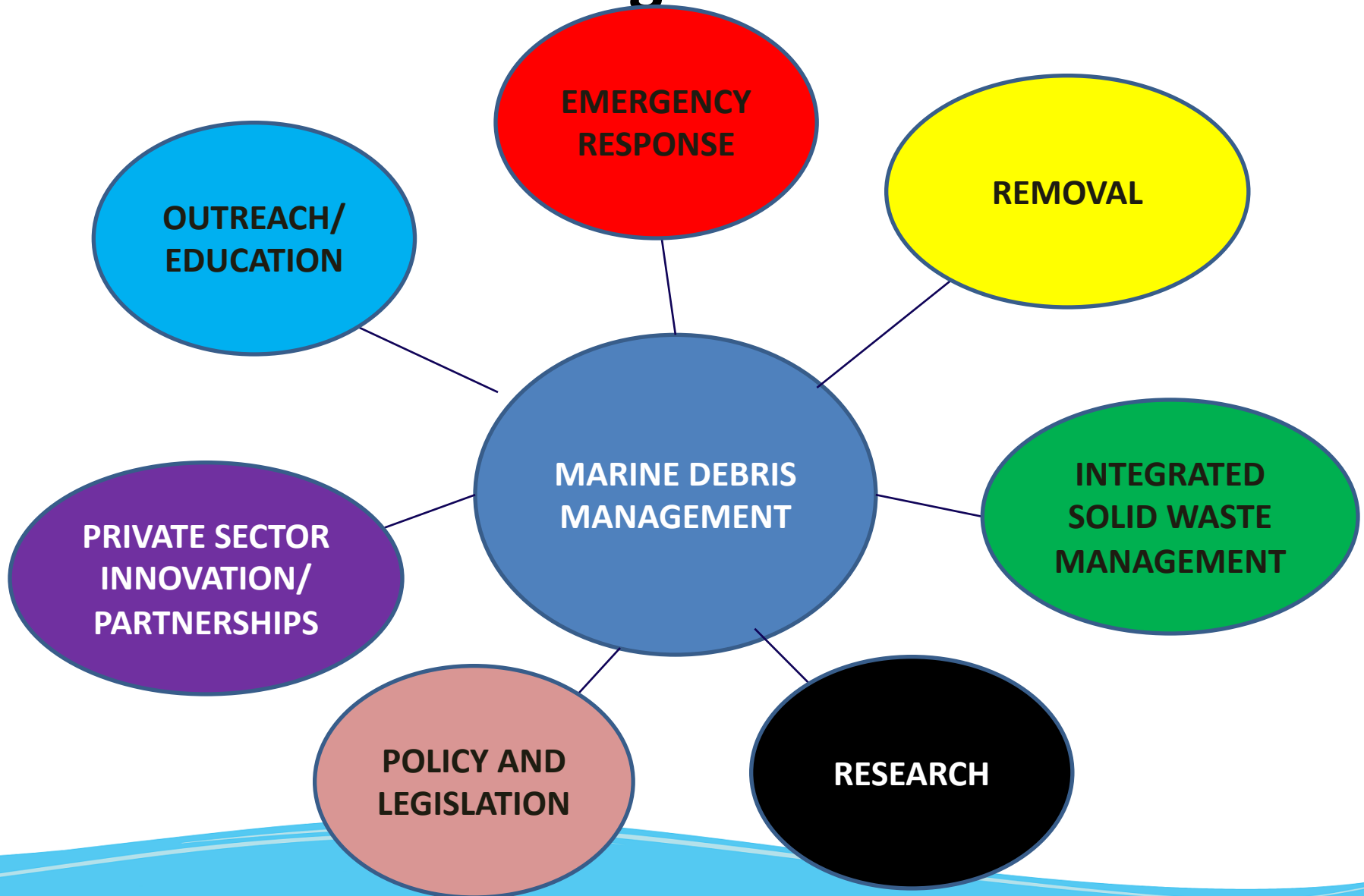
Marine Debris: Awareness and Prevention

Environmental Protection Hierarchy





Marine Debris Management: All Stakeholders





Marine Litter Workshop and ICC, 24-27 Sep. 2019 Dalian, China

- 2019 Joint NOWPAP – TEMM (Tripartite Environment Ministers Meeting among China, Japan, and Korea) Workshop on Marine Litter Management,
- NOWPAP International Coastal Clean-up Campaign (ICC),
- NOWPAP Regional Action Plan on Marine Litter (RAP MALI) Focal Points Meeting
- Second Expert Group Meeting of the NOWPAP Special Project “Monitoring and Assessment Methods for Microplastics Pollution”



Marine Litter Section of NOWPAP Website

<https://www.unenvironment.org/nowpap/what-we-do/prevent-and-reduce-pollution/marine-litter-and-microplastics?%2Fwhat-we-do%2Fprevent-reduce-pollution%2Ftackling-marine-litter-northwest-pacific=>