



2014 NOWPAP
International Coastal Cleanup and
Workshop on Marine Litter Management

Boryeong , Republic of Korea
25-26 September 2014



Organizers: NOWPAP Regional Coordinating Unit (RCU)
Ministry of Oceans and Fisheries (MOF)
Korea Korea Marine Environment Management Corporation (KOEM)

Supporters: Chungchungnam Prefectural Government
Boryeong Municipal Government

NOWPAP

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Summary of the 2014 NOWPAP International Coastal Cleanup (ICC) and Workshop on Marine Litter Management

2014 NOWPAP ICC was organized on 25-26 September 2014 in Boryeong, Republic of Korea. This event was aimed to promote implementation of the NOWPAP Regional Action Plan on Marine Litter (RAP MALI), to build capacity for effective management of marine litter in the NOWPAP region, to promote the Global Partnership on Marine Litter (GPML) in the region, to share information and strengthen cooperation in the region on marine litter management among central and local governments, regional organizations, NGOs and research institutions. The NOWPAP annual event comprised a beach cleanup campaign and a workshop on marine litter management.

Opened by the Minister of the Oceans and Fisheries of Korea (MOF), the beach cleanup brought several hundreds of local school kids and citizens who joined NOWPAP participants to collect and classify the marine litter on the beach and record the results in the ICC data cards. The marine litter workshop was opened by the Deputy Minister of MOF and was attended by about 50 participants, featuring management efforts by central and local governments, best practices in dealing with sea-based marine litter and international cooperation.

NOWPAP marine litter focal points, representatives of national and local governments in the NOWPAP member states (China, Korea, Japan and Russia), NOWPAP partners (GPA, GESAMP and PEMSEA), universities, research institutes and environmental NGOs participated in the event.

During the 2014 NOWPAP ICC, a brief working meeting was also organized in which NOWPAP marine litter focal points and representatives of NOWPAP regional activity centers reviewed the progress made on marine litter management by NOWPAP members and shared information regarding the implementation of the NOWPAP Regional Action Plan on Marine Litter in 2014-2015.

The 2014 NOWPAP ICC was co-organized by NOWPAP Regional Coordinating Unit (RCU), Ministry of Oceans and Fisheries (MOF), Korea and Korea Marine Environment Management Corporation (KOEM), with the supports from Chungcheongnam Prefectural Government and Boryeong Municipal Government.

Outcomes of the 2014 NOWPAP ICC workshop on marine litter management are as follows:

- Understanding of marine litter as a global concern was enriched as the two keynote speakers (from GPA and GESAMP) presented challenges and efforts made by international community to address the marine litter as well emerging issue of microplastics in the oceans in terms of sources, fate and effects.
- Efforts made by central and local governments were demonstrated through the cases presented by Japan and Korea stressing the role and responsibility of the governments in making national plans and providing financial support.
- Local market for recycling marine litter is growing as shown in the Chinese presentation indicating local industry of treating abandoned fishing nets.
- Best practices were employed in the cases of Kagawa Prefecture of Japan and Chungchungnam Prefecture of Korea stressing the integrated approach to deal with marine litter ('Satoumi' - Kagawa) and actions taken in response to an urgent call ('time and tide wait for no man, but for change' - Chungchungnam).
- Measures on monitoring sea based marine litter were learned through the presentations by Kyushu University (Japan) and Ecology Technologies Center (Russia). Activities carried out by MERRAC addressing sea based marine litter were also introduced.
- International cooperation in the NOWPAP region was enhanced as shown in the establishment of the GPML Northwest Pacific regional node, the implementation of PEMSEA integrated coastal management, development of ICC network (JEAN case for cooperation on tsunami-generated marine debris with partners in the United States) and NGO partnership network (OSEAN case on activities to promote regional cooperation in east Asia). Marine litter from land based sources can be also approached with a holistic waste management for cities as shown in the case of IETC presentation.

Suggestions from the 2014 NOWPAP ICC workshop on marine litter management:

- Further strengthen the cooperation with the major players in the region and beyond
- Further engage environmental NGOs
- Involve industry in the subsequent events
- Consider a unified regional monitoring programme

- Organize 2015 NOWPAP ICC in China
- Consider GPA funding for NOWPAP activity
- Compile, publish and distribute workshop proceedings

Programme

25 September 2014 (Thursday): ICC Campaign and Working Meeting

ICC Campaign at the Beach

13:30	Leave Hotel Mudrin by walk
14:00 –16:30	Opening ceremony Beach cleanup
16:30 –17:00	Back to the hotel
19:00 - 20:30	Reception hosted by the Ministry of Oceans and Fisheries (MOF) at the hotel

RAP MALI Working Meeting

17:30 – 18:45	RAP MALI Working Meeting (Hotel Mudrin)
Participants:	NOWPAP marine litter focal points, RAC directors (representatives), and NOWPAP RCU.

26 September 2014 (Friday): Workshop on Marine Litter Management

08:30 - 09:00	Registration
09:00 – 09:30	Opening Ceremony (Master of the event: Ms. Sun-Wook HONG, Our Sea of East Asia Network (OSEAN, Korea) Speeches by: Mr. Hae Nam MOON, Deputy Minister, MOF Mr. Hyun-Jong KIM, Vice President, KOEM Mr. Xiaodong ZHONG, Deputy Coordinator, NOWPAP
09:30 – 10:40	Keynote Presentations: Marine litter challenge – out of sight, out of mind? Ms. Heidi SAVELLI, Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) Sources, fate and effects of microplastics in the ocean Dr. Peter KERSHAW, Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)
10:40 - 11:10	Photo Session & Coffee Break
Session I	Central and local governments' efforts activities (Chairperson: Dr. Atsuhiko ISOBE, Kyushu University, Japan)
11:10 – 11:30	Local government's efforts in China Mr. Xinran HE, Environmental Monitoring Centre of Lianyungang City, China
11:30 – 11:50	Central government's efforts in Japan Mr. Jun SAEGUSA, Ministry of the Environment, Japan
11:50 – 12:10	Central and local government's efforts in Korea Mr. Chae-Kyun KIM, Ministry of Oceans and Fisheries, Korea
12:10 – 12:30	International Coastal Cleanup in the Russian Far East: results and perspectives Dr. Yana BLINOVSKAYA, Maritime State University, Russia

12:30 – 12:50	Local government's efforts in Japan Mr. Hiroshi, MIKI, Kagawa Prefecture, Japan
12:50 - 13:50	<i>Lunch break</i>
	Session II Best practices in dealing with sea-based marine litter (Chairperson: Mr. Seong-Gil KANG, Marine Environmental Emergency Preparedness and Response Regional Activity Centre (MERRAC))
13:50 – 14:10	Best practices in dealing with sea-based marine litter in Japan Dr. Atsuhiko ISOBE, Kyushu University, Japan
14:10 – 14:30	Best practices in dealing with sea-based marine litter in Korea Mr. Jong-Gwan JUNG, Chungnam Development Institute, Chungchungnam Prefecture, Korea
14:30 – 14:50	Experience of marine litter monitoring in Vladivostok port area Ms. Mariia VYSOTCKAIA, Ecology Technologies Center, Russia
14:50 – 15:10	Sea-based marine litter management in the NOWPAP region Ms. Yoon Young BACK, MERRAC
15:10 – 15:30	<i>Coffee Break</i>
Session III	International cooperation in the NOWPAP region (Chairperson: Mr. Xiaodong ZHONG, NOWPAP RCU)
15:30 – 15:50	Northwest Pacific regional node of the Global Partnership on Marine Litter Mr. Takafumi Yoshida, Northwest Pacific Region Environmental Cooperation Centre, Japan
15:50 – 16:10	Collaboration on marine litter monitoring between NOWPAP countries Mr. Ho-Jeong CHOI, KOEM
16:10 – 16:30	ICM: Platform for International Cooperation on Marine Litter Management Ms. Daisy Padayao, Partnerships in Environmental Management for the Seas of the East Asia (PEMSEA)

- 16:30 – 16:50 International Cooperation – Opportunity in ICC Network
Ms. Yoshiko OHKURA, Japan Environmental Action Network (JEAN),
Japan
- 16:50 – 17:10 NGO efforts to promote international cooperation
Ms. Sun-Wook HONG, OSEAN, Korea
- 17:10 – 17:20 Holistic waste management for cities to address marine litter from
land-based sources (Auto-run presentation prepared by Dr. Mushtaq
MEMON, international Environmental Technology Centre (IETC)
- 17:20 – 17:30 Wrap-up
- 17:30 Closing of the workshop**

List of Participants

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Presentation Handouts

Keynote speeches

Marine litter challenge – out of sight, out of mind?

-Ms. Heidi SAVELLI, Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)

Sources, fate and effects of microplastics in the ocean

-Dr. Peter KERSHAW, Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)

Session one

Local government's efforts in China

-Mr. Xinran HE, Environmental Monitoring Centre of Lianyungang City, China

Central government's efforts in Japan

-Mr. Jun SAEGUSA, Ministry of the Environment, Japan

Central and local government's efforts in Korea

-Mr. Chae-Kyun KIM, Ministry of Oceans and Fisheries, Korea

International Coastal Cleanup in the Russian Far East: results and perspectives

-Dr. Yana BLINOVSKAYA, Maritime State University, Russia

Local government's efforts in Japan

-Mr. Hiroshi, MIKI, Kagawa Prefecture, Japan

Session two

Best practices in dealing with sea-based marine litter in Japan

-Dr. Atsuhiko ISOBE, Kyushu University, Japan

Best practices in dealing with sea-based marine litter in Korea

-Mr. Jong-Gwan JUNG, Chungnam Development Institute, Chungchungnam Prefecture, Korea

Experience of marine litter monitoring in Vladivostok port area

-Ms. Mariia VYSOTCKAIA, Ecology Technologies Centre, Russia

Sea-based marine litter management in the NOWPAP region

-Ms. Yoon Young BACK, MERRAC

Session three

Northwest Pacific regional node of the Global Partnership on Marine Litter

-Mr. Takafumi Yoshida, Northwest Pacific Region Environmental Cooperation Centre, Japan

Collaboration on marine litter monitoring between NOWPAP countries

-Mr. Ho-Jeong CHOI, KOEM

ICM: Platform for International Cooperation on Marine Litter Management

-Ms. Daisy Padayao, Partnerships in Environmental Management for the Seas of the East Asia (PEMSEA)

International Cooperation – Opportunity in ICC Network

-Ms. Yoshiko OHKURA, Japan Environmental Action Network (JEAN), Japan

NGO efforts to promote international cooperation

-Ms. Sun-Wook HONG, OSEAN, Korea

Holistic waste management for cities to address marine litter from land-based sources

-Dr. Mushtaq MEMON, international Environmental Technology Centre (IETC)



The Marine Litter Challenge – Out of sight, out of mind?



By Heidi Savelli, Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), UNEP



Marine Litter definition

'any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment'

- Continuous growth: amount of solid waste thrown away/slow degradation
 - Land-based:** waste from dumpsites, recreational activities, fishing industry activities, ship-breaking yards
 - Sea-based:** abandoned, lost or discarded fishing gear, shipping activities, legal/illegal dumping
- High costs: coastal communities, tourism/shipping/fishing industries, loss of biodiversity and of ecosystem functioning and service.
- Very visible - No other marine pollution component mobilizes such public participation and readiness to act.



Plastic

- One of the main types of marine litter is plastic debris. About 280 million tonnes of plastic is produced globally each year
- Transported by ocean currents, few places around the globe have not been infested by this material.
- Once in the ocean, plastic does not go away: it fragments, eventually breaking down into smaller pieces known as microplastics.
- The recently launched UNEP supported report Valuing Plastic, estimates the natural capital cost of plastic alone on the marine environment to \$13 billion per year. This includes financial losses incurred by fisheries and tourism as well as time spent cleaning up beaches. Underestimation.
- The outcome document of Rio+20 set the goal to reduce global levels of marine litter by 2025, and the UNEP/UNDESA led SIDS Foresight process further identified waste management and marine litter as priority areas for SIDS.



UNEP and Partnerships

No actor can solve the problem in isolation

UNEP's approach to environmental management revolves around the creation of effective partnerships. These include:

- The **Global Partnership for Waste Management**
- The **Global Partnership on Marine Litter (GPML)**
- The **Global Partnership on Nutrient Management**
- The **Global Wastewater Initiative**
- The **Global Coral Reef Partnership**



History of the GPML

- The **Global Programme of Action** for the Protection of the Marine Environment from Land-based Activities (GPA) was adopted in **1995** and is **hosted by UNEP**
- The **GPA is the only global intergovernmental mechanism** directly addressing the connectivity between terrestrial, freshwater, coastal and marine ecosystems. Marine Litter is one of the priority source categories
- The 3rd Intergovernmental review meeting in 2012 recommended the establishment of a **Global Partnership on Marine Litter (GPML)** which was subsequently launched at the Rio+20 meeting under the auspice of the GPA.
- The first Partnership forum was held October 2013 – feedback incorporated in workplan



What is the GPML?

- The GPML seeks to protect human health and the environment by the reduction and management of marine litter
- It is a Multi-Stakeholder Partnership involving: IGOs, Governments, NGOs, Private sector, academia
- Guided by the Honolulu Strategy, the GPML has several focal areas:
 - Reduced levels and impact of Land-based sources of ML – led by UNEP/GPA
 - Reduced levels and impact of Sea-based sources of ML – led by IMO and FAO (ALDFG)
 - Reduced levels and impact of ML on shorelines, habitats and biodiv.
- UNEP's Role (Secretariat):
 - Facilitate "matchmaking" and use its **convening power** to bring together the various stakeholders
 - **Coordinate with relevant initiatives**



Objectives

The GPML aims to achieve the following objectives:

- To address the (ecological, human health, and **economic**) impacts of marine litter worldwide
- To enhance international cooperation and coordination (with Governments, *private sector, civil society* etc.)
- To promote **knowledge management, information sharing** and monitoring of progress and **increase awareness on marine litter sources, fate and impacts.**
- To promote resource efficiency and economic development through waste prevention (e.g. 4Rs) and by **recovering valuable material and/or energy from waste.**
- To assess emerging issues related to the fate and potential influence of marine litter, such as (micro) plastics & associated transfer of pollutants.



Actions Worldwide

Publications, guidelines and Research Papers

- An e-book (YB) and brochure on microplastics
- Valuing Plastic publication (June 2014)
- Short papers demystifying issues (Oct/Dec):
 - Microplastics and food safety
 - Biodegradable/bio plastics – friend or foe?
- Plastics in Cosmetics – is our personal care polluting the environment? (October 2014)
- Guidelines on Abandoned, Lost or Discarded Fishing Gear (FAO – December 2014)




Actions Worldwide

Marine Litter Action Plans & pilot projects

- Regional ML Action Plan in the Mediterranean (in force July 2014), Caribbean
- National Action Plan on ML - Nigeria
- Municipal action Plans on ML (Chile, Colombia, Panama, Peru, Ecuador, Brazil)
- Pilot activities: Waste minimization, Samoa; Ghost Gear Identification project
- Under development: Public-private partnerships to give waste(plastics) a value




Actions Worldwide

Awareness, Outreach & Capacity building

- Supported Internationalization of the “Beat the microbead” initiative
 - Many personal care products and cosmetics contain plastics
 - Now 50 NGOs - App in 7 languages – helps consumers to check if a product contains microbeads by just scanning the barcode with your smartphone camera
 - Promotes a phase out of microbeads by industry
 - <http://get.beatthemicrobead.org/>
- Supported the development of the Global Ghost Gear Initiative (GGGI)
- Capacity building in Southeast Pacific (600 pax)
- Media trainings





Actions Worldwide


- Establishment of a Marine litter observation system (IMO)

On-line Marine Litter Network

- To connect with global stakeholders
- To communicate
- To share information
- To collaborate
- To track progress on implementation of the Honolulu Strategy




www.marinelitternetwork.org



Actions Worldwide

Establishment of Regional nodes - GPML

- Support regional activities aiming to introduce the global partnership and the online platform through “regional nodes”.
- Support to the implementation of the HS:
- UNEP will support and encourage develop of additional regional/national action plans or strategies to address the problem of marine litter;
- UNEP will also seek to strengthen efforts at the national level & aim to facilitate coordination amongst stakeholder groups.
- Northwest Pacific first regional node – Caribbean and South Pacific

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UNEA Resolution

UNEP's Actions at the Global level: UN Environment Assembly – Resolution on Marine Plastic Debris and Microplastics, 27/6 2014:

- "Encourages Governments, intergovernmental organizations, industry and others to cooperate with the Global Partnership on Marine Litter"
- "Emphasizes that further urgent action is needed to address the challenges posed by marine plastic debris and microplastics, by addressing such materials at source"
- "Encourages Governments and the private sector to promote more resource-efficient use and sound management of plastics and microplastics"
- "Request UNEP ED to present a study on microplastics to UNEA-2"

 UNEP

Future Activities

Study on microplastics for UNEA-2 (global and regional processes)

- Core microplastics study (nano-plastics, vector role, evidence-based)
- Microplastics impact on fisheries and aquaculture
- Modelling and monitoring → hotspots
- Socio-economic component
- Compilation of Best Available Technologies/Environmental Practices (BATs/BEPs)
- Regional Components
- SIDS specific chapters and recommendations throughout the study



 UNEP

Potential Future Activities

Supporting Activities at the Global level

- Innovation Challenge for Universities/private sector
 - Engineering challenge (new materials, redesign, prevention)
 - Communications challenge (raise awareness, engage)
 - Prediction/recovery challenge (predict, modelling, hotspot)
- Massive Open Online Course ML – MOOC
 - (Expert & Leadership tracks)
- Campaign (2-3 components including microplastics in cosmetics)
- Demonstration/pilot projects
- Action plans, plastics management strategy SIDS
- Other priority actions? Opportunities for twinning/matchmaking?



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THANK YOU!

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Sources, fate and effects of microplastics in the marine environment – a global assessment

Dr Peter J Kershaw

Chairman GESAMP www.gesamp.org

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NOWPAP Marine litter workshop, September 2014

GESAMP is an inter-Agency body of the United Nations, founded in 1969 to:

‘To provide authoritative, independent, interdisciplinary scientific advice to the sponsoring organizations to support the protection and sustainable use of the marine environment.’

One role - to identify emerging issues:
e.g. hypoxia, biomagnification of contaminants & **microplastics**



GESAMP Working Group 40

‘Sources, fate & effects of microplastics in the marine environment – a global assessment’

2012 - 2014

Participants:
Brazil, Chile, Germany, **Japan, Korea**, Netherlands, South Africa, UK, USA

Final Assessment Workshop: 8-10th July 2014, Busan

Publication of report: November 2014

Lead Agency: UNESCO-IOC
additional sponsors: IMO, UNEP, UNIDO, NOAA, PlasticsEurope, ACC

WG40 objectives, to assess:

- Definitions, sources & inputs
- Transport & distribution (field observations and modelling in space & time)
- Long-term behaviour, including fragmentation
- Chemical & physical effects on marine organisms
- Social aspects, including public awareness.

Target audience:

- Policy makers
- Environmental managers
- Commercial and industrial sectors (designers, manufacturers, fisheries & aquaculture, coastal tourism)
- General public
- Natural scientists, social scientists & economists


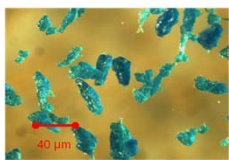

Definitions - ‘Primary’ microplastics

Industrial uses:

- Plastics manufacturing
- Abrasives, molds

Domestic uses:

- Toothpaste, hand cleansers







Extract from toothpaste, Joel Baker



Industrial resin pellets recovered by the shoreline, Hideshige Takada

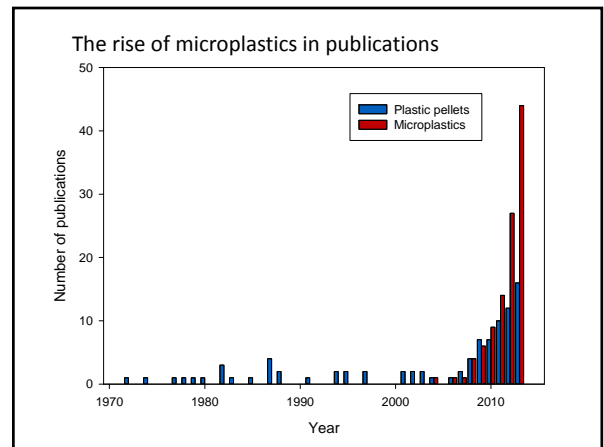
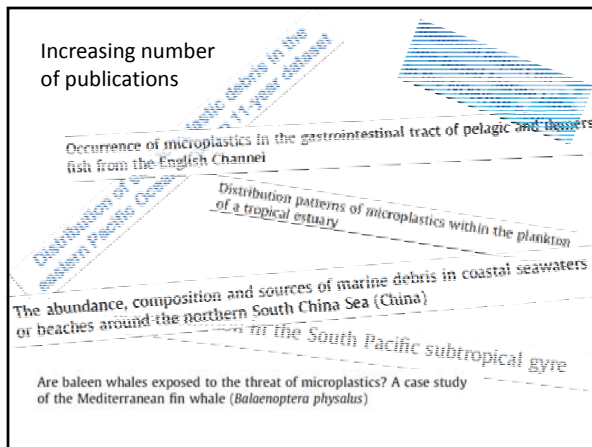
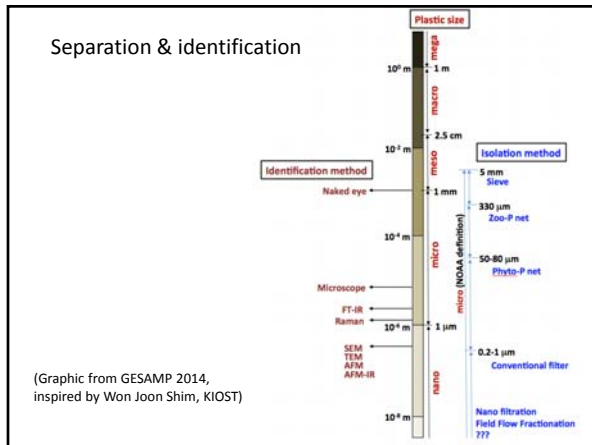
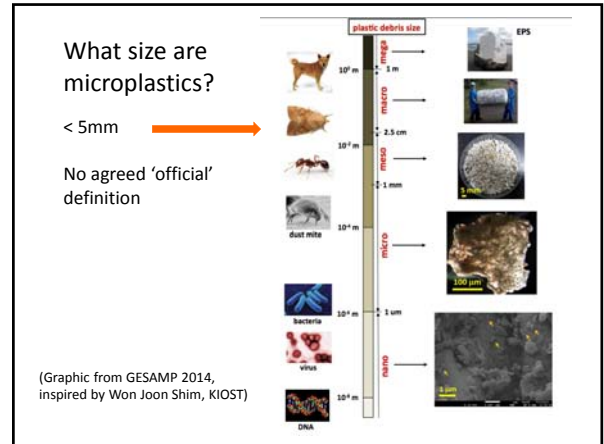
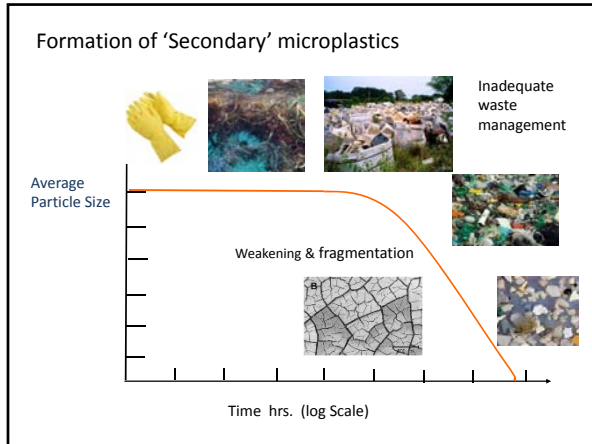
‘Primary’ microplastics – routes of entry

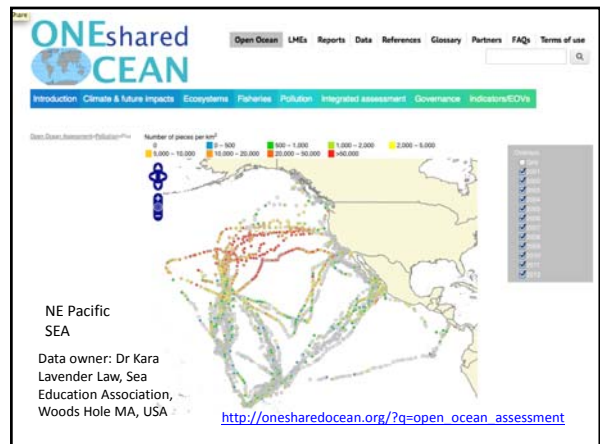
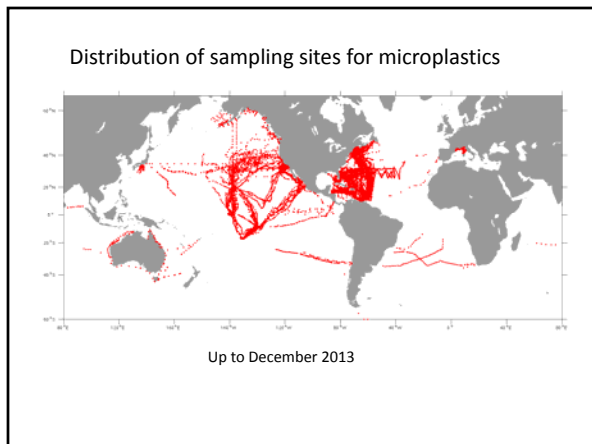
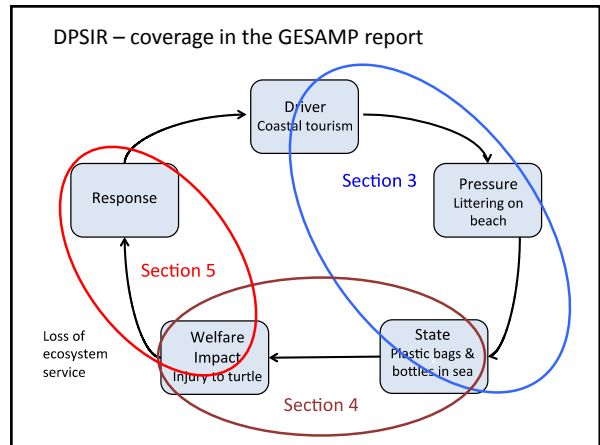
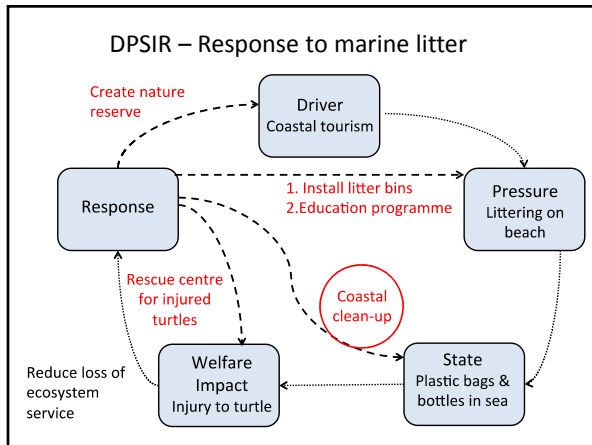
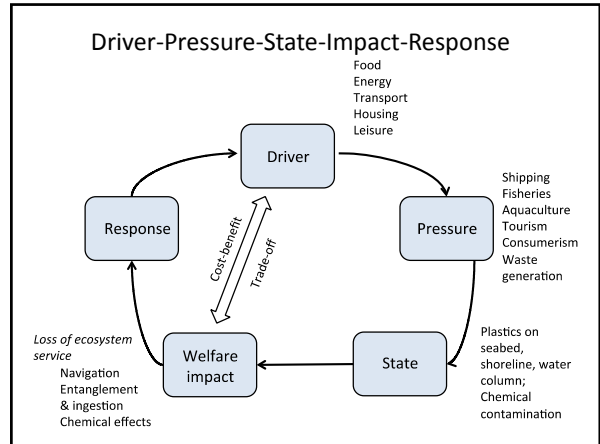
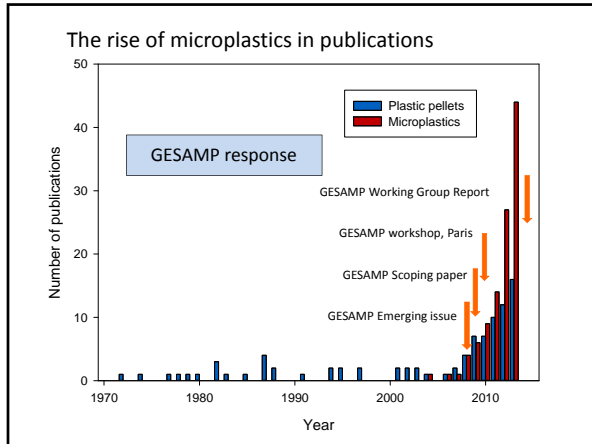
- Accidental during transport
- Inadequate industrial practices
- Inadequate waste treatment

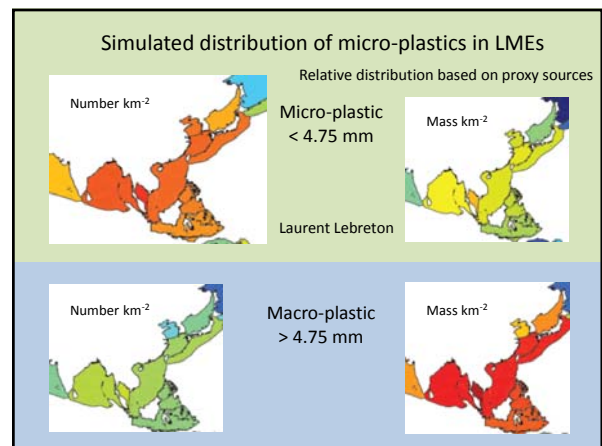
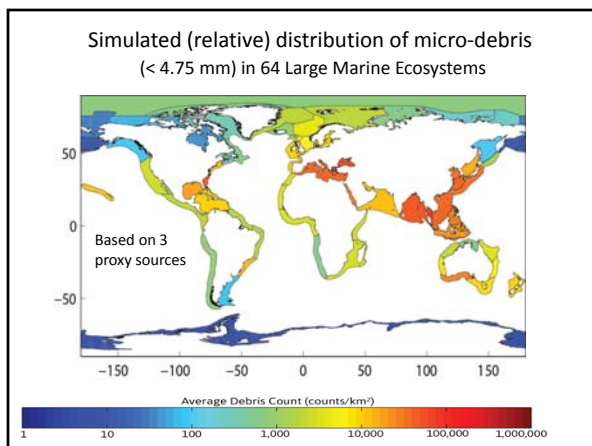
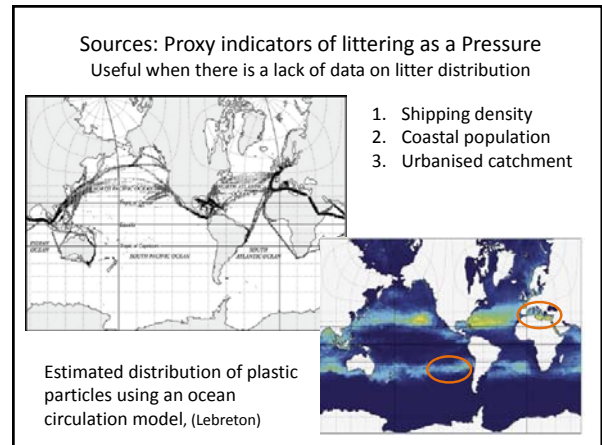
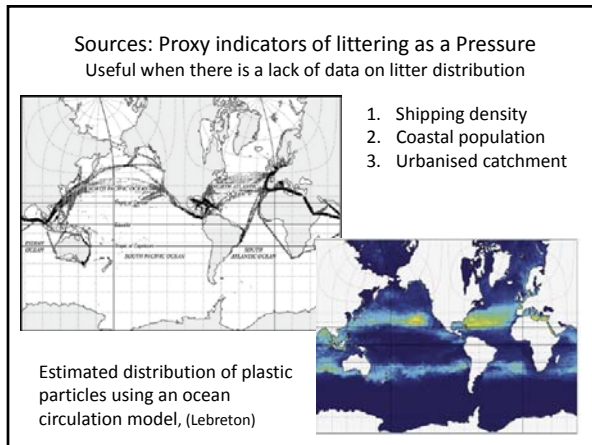
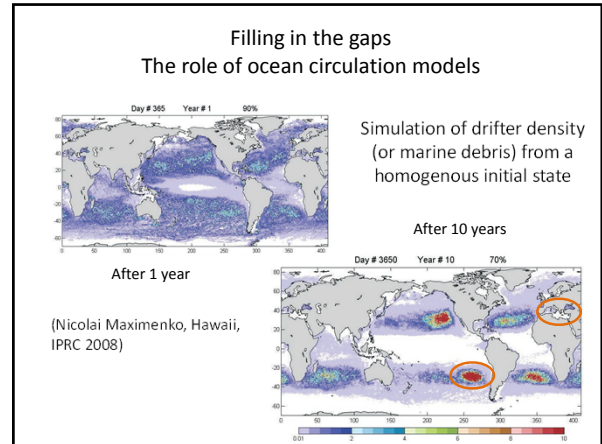
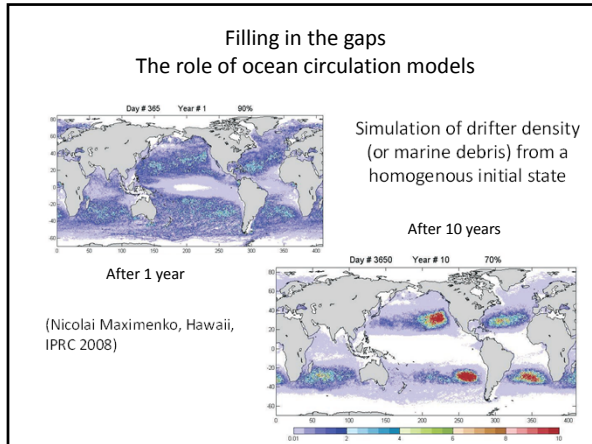



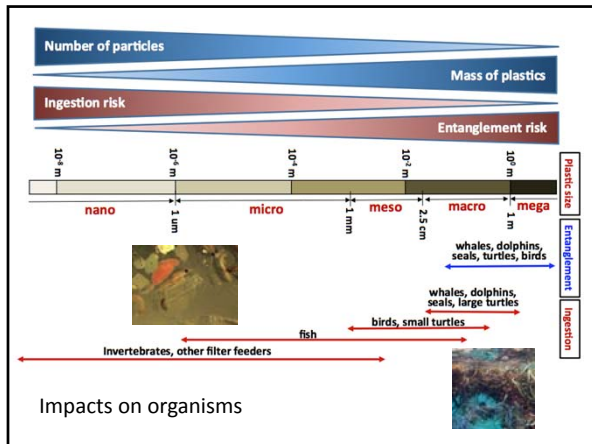
e.g. *Yong Xin Jie* near Hong Kong, Typhoon Vicente, August 2012









Ingestion by marine organisms

Northern fulmar, NE Atlantic (van Franeker)

Stomach contents

<http://5gyres.org/>

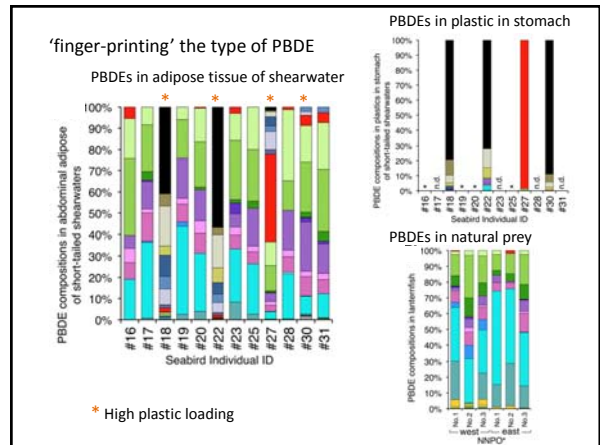
Gut transfer of contaminants from plastic vs. prey?

PBDE flame retardants in short-tailed shearwaters, northern North Pacific Ocean

PBDEs (polybrominated diphenyl ethers) - used as a flame retardant on textiles & as an additive in some plastic products, and are endocrine disruptors

5mm squares

Kosuke Tanaka, Tokyo Univ. Agric. & Technol. Tanaka et al., 2013, Mar. Poll. Bull., 69, 219-222



- ### Why micro-plastics can be considered a growing threat:
- Increasing in abundance
 - Ingested by large variety of organisms
 - Can cause physical harm
 - Additives *may* have an ecotoxicological effect
 - Absorbed organic contaminants *may* have an ecotoxicological effect
 - Emerging evidence of transfer of chemicals from plastic particles to tissue
 - Cannot remove them from the environment in significant quantities

- ### Key challenges and recommendations:
- Action-orientated recommendations addressing marine microplastics :
1. identify the main sources and categories of plastics and microplastics entering the ocean
 2. utilise end-of life plastic as a valuable resource rather than a waste product
 3. promote greater awareness of the negative impacts of plastics and micro-plastics of society and the environment

Key challenges and recommendations:

Recommendations to improve a future assessment :

1. include particles in the nano-size range in future assessments
2. consider the potential significance of plastics and microplastics as a vector for organisms in future assessments.
3. future assessments should address the additional chemical risk posed by ingested microplastics

What can we do about it?

- 'Primary' microplastics
 - Prevent entry into the ocean by improved waste management
 - Reduce use of plastics in abrasives, e.g. substituting plant or mineral material
- 'Secondary' microplastics
 - Improve overall waste management on land and at sea - & public attitudes
 - Reduce accidental loss of fishing gear & other materials at sea
 - Remove plastic items from coastlines, rivers & other points of entry



Thank you!

Dr Peter J Kershaw

www.gesamp.org

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Coastal Cleanup Action in Lianyungang, China


25-26 September 2014
Environmental Monitoring Center of Lianyungang ,China

Contents

- 1 Introduction
- 2 Coastal cleanup Action
- 3 Prospective View


1. Introduction

Lianyungang is located in the northeast of Jiangsu Province. It connects the Yangtze River Delta in the south and the Bohai Bay in the north. It also faces Japan and Korea to the east. It is a well-known tour city for the 'capital of crystals' and the cultural origin of the masterpiece 'Travels to the west'.



1. Introduction

Lianyungang is one of the coastal cities in Jiangsu Province, with the total coastline of 210 km. Its economic development mainly relies on the ocean resources and the pollution of marine environment becomes more and more serious. Marine litter is one of the most important environmental problems for solid waste management, which is closely linked to the sustainable development of the coastal city of Lianyungang.



1. Introduction

There are three major problems related to the marine environment in Lianyungang:

- ◆ We are confused by the categories and components of marine litter due to the lack of investigation and management.
- ◆ Managers need more environmental knowledge and the public need to improve their environmental awareness.
- ◆ Tourism waste has always been a main problem for Lianyungang.

1. Introduction

In order to address the marine litter problem at the regional level:

International: NOWPAP countries (such as China, Russia, Japan and Korea) join ICC campaigns.

→

Lianyungang: Coastal Cleanup Action is under the leadership of local government.

2. Coastal Cleanup Action

Local government plays an important role in protecting the environment

- ◆ Perfect the environmental management system
- ◆ Strengthen the volunteer teams
- ◆ Enhance the scientific research
- ◆ Promote various activities for the sea protection

2. Coastal Cleanup Action

a) 2011 NOWPAP ICC (Lianyungang, China)

The goal of NOWPAP regional action on marine litter is to improve the marine environment by addressing cooperation and partnerships. Rizhao in 2007 and Dalian in 2008, Lianyungang was in 2011, in China.



2. Coastal Cleanup Action

a) 2011 NOWPAP ICC (Lianyungang, China)

In order to establish a volunteer team with a good knowledge of environmental protection, The government carried out some scientific and technical trainings.



2. Coastal Cleanup Action

a) 2011 NOWPAP ICC (Lianyungang, China)



People from all professions and trades take part into the action.



2. Coastal Cleanup Action

a) 2011 NOWPAP ICC (Lianyungang, China)



garbage classification and statistical records

2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets

Discarded fishing nets is a common marine garbage. Due to the development of fishery, the pollution of discarded fishing nets becomes more and more severe in China, which has the largest quantity of fishing boats in the world. In China, there are about 40000 tons fishing nets scrapped every year. The fishery industry of Lianyungang is also very developed and the pollution of discarded fishing nets is very serious.



2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets


Xijidang is a famous village in Lianyungang as for the reuse of discarded fishing nets. Among the 40000 tons nets discarded in China, about 35000 tons nets became useful goods in this village.



2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets

The first company for reuse discarded fishing nets in Xijidang village was founded in 1998. Now, there are about 140 factories for the reuse of discarded fishing nets in Xijidang village, which becomes the largest reuse base in China. The discarded nets were collected not only from Lianyungang, but also from Fujian, Guangdong Province, and so on.



2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets

The crushing and filtering steps during the whole process



2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets

Process into primary goods Plastic particles



2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets

In order to avoid secondary pollution during the reuse of discarded fishing nets, a wastewater treatment was built in 2009.



2. Coastal Cleanup Action

b) An example: Reuse of discarded fishing nets

Treatment capacity: 500 tons wastewater every day



2. Coastal Cleanup Action

c) The support of NGO:
 In the first, various volunteer service teams were founded in different communities. They do simple things everyday to protect the marine environment.

2. Coastal Cleanup Action

c) The support of NGO:
 Protect the Qiangwei River for potable drinking water!

With the deterioration of the environment, 31 volunteer organizations were founded in Donghai County, Lianyungang City. Today, there were 1100 members from every trade, such as farmers, workers and so on.

2. Coastal Cleanup Action

c) The support of NGO:
 Later, a formal organization was founded with the help of some media-----The Volunteer Association for Coastal Cleanups

The Volunteer Association for Coastal Cleanups in Lianyungang was established on November 8, 2011. It includes about 1000 members, and has implemented about 160 campaigns in 7 years.

2. Coastal Cleanup Action

c) Volunteer association for coastal cleanups

2. Coastal Cleanup Action

c) Volunteer association for coastal cleanups

Ecological investigations around Haizhou Bay Estuary

2. Coastal Cleanup Action

c) Volunteer association for coastal cleanups

Ecological investigations around the yellow sea

2. Coastal Cleanup Action

d) Academic research

A government funded research project were conducted in 2011, which about the assessment of ecological restoration of pollution from water and sediments of Guanhe Estuary.



2. Coastal Cleanup Action

e) Ecological restoration demonstration project of the beach

The ecological restoration demonstration project was also funded by the government, with the purpose of creating a beautiful view of the beach.



3. Prospective View

In order to make the coast more and more beautiful, we should continue to intensify efforts on the basis of the coastal cleanup actions mentioned above:

- ◆ Further strengthen the beach demonstration project.
- ◆ Enhance coastal cleanup of marine litter.
- ◆ Strengthen and broaden the role of NGO in coastal cleanup action.

Thanks for your attention !

Central government's efforts in Japan

Jun Saegusa
Ministry of the Environment, Government of Japan

Contents

1. Issue of Marine Litters in Japan
2. On going Project by Government of Japan
 - * Surveillance
 - * Subsidy project
 - * International cooperation
3. Conclusion


1

1. Issue of Marine Litters in Japan

Nagasaki Pref. (Tsushima-city)




Yamagata Pref. (Tobishima)



【Damage caused by marine debris】
Bad effects on ...

Marine Environment Beautiful Beach...Tourism
Ecosystems Fishery Operation Ship Navigation etc.



2

1. Issue of Marine Litters in Japan

Debris from abroad





Plastic containers
(Korean Character)



Cleansing soap containers
(Chinese Character)

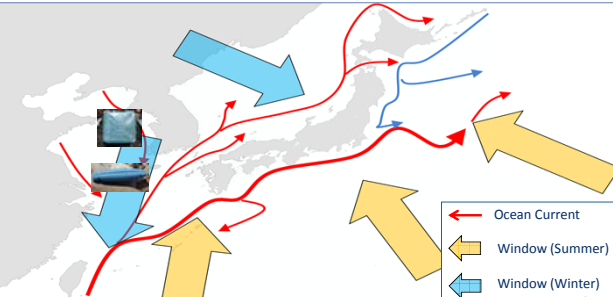


Fishery gear...float
(Chinese Character)

3

1. Issue of Marine Litters in Japan

Current and Windows around NOWPAP Region



← Ocean Current

← Window (Summer)


← Window (Winter)

4

1. Issue of Marine Litters in Japan


Debris from abroad (Waste plastic container and Fishery gear washed ashore to our coast)

Plastic Containers



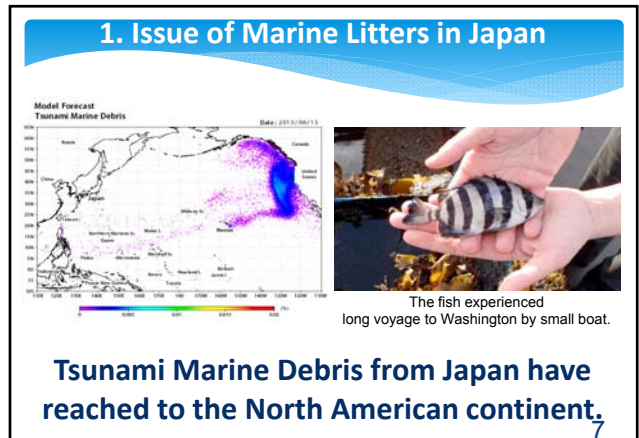
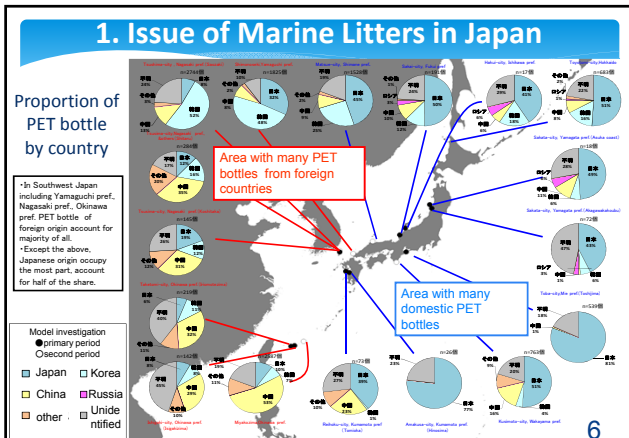
Year	Amount of Plastic containers	With Korean Character
2011	4,099	1,364
2012	5,547	2,238
2013	9,723	4,868

Fishery gear float



Year	Amount of Fishery Float	With Chinese Character
2011	29,974	8,055
2012	58,208	4,877
2013	30,655	13,013

5

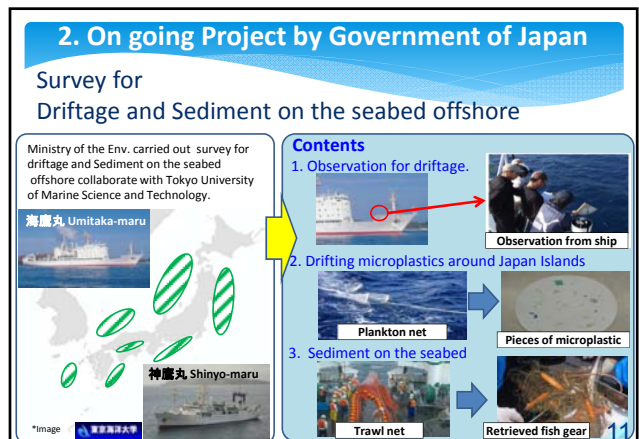
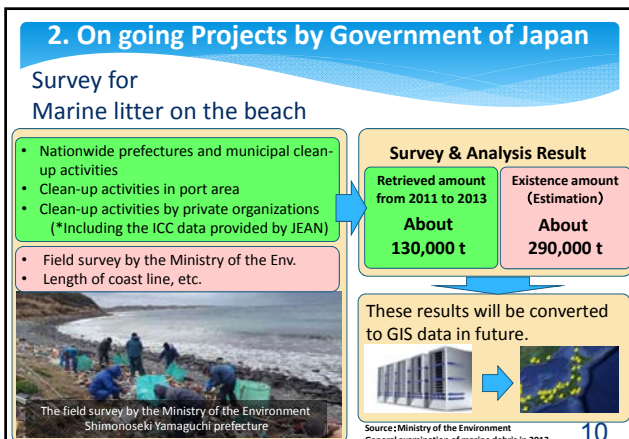
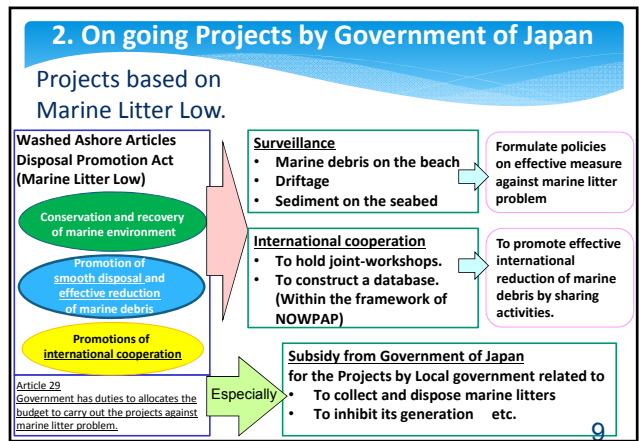


1. Issue of Marine Litters in Japan

↓

Issue of Marine Litters in NOWPAP REGION ! China, Japan, Korea and Russia!

8



2. On going Project by Government of Japan

Subsidy project
For collecting marine litters etc...

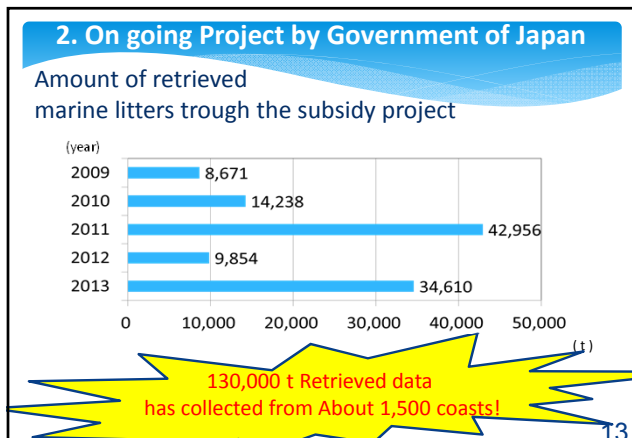
Project for the promotion of Regional Marine debris disposal	Budget 2009 -2012 About 60 million USD 2013 - 2014 About 100 million USD
---	--

Based on "Marine Litter Law" Article 29, Government of Japan have carried out the subsidy project with the budget 100 million USD to be realize beautiful beach.
The subsidy rate for local government's cleaning up project is 100 %

Flow of the subsidy

```

    graph LR
      A[Government of Japan] -- 50% --> B[Prefectural and City governments]
      B -- 100% --> C[To formulate and amend regional plan]
      B -- 100% --> D[To collect and dispose marine debris on the beach]
      B -- 100% --> E[Projects related to inhibit its generation]
    
```



2. On going Project by Government of Japan

1,500 GIS data from The Subsidy project

These GIS data shows activities in NOWPAP region, and would be shared to government officials, scientists, NGO...etc and it promotes to solve marine litter problem.

TEMM Joint project addressing marine litter issue among Japan, China & Korea, Russia

Marine litter drift in the surrounding ocean area, sink on the sea bottom, and are washed ashore. These litter cause adverse effect on the marine environment, disturb navigation, and spoil beautiful scenery.

It's the time that we, 4 countries cooperate to solve the problem, and get back our beautiful ocean!

Japan main policies in 2014

- Survey on marine litter (to grasp geographical and temporal change)
 - Survey on drifting litter & micro-plastic offshore.
 - Survey on marine litter on the coast & sea bottom.
- Collection & disposal of the marine litter on the coast
- Reduction of generation of marine litter

Marine litter database

We propose to hold periodic meetings in which government officials and scientists participate, as well as to construct the marine litter database to share information about marine litter. Let's preserve our marine environment as a mutual asset among three nations together!

- ### 3. Conclusion
- Marine litters travel and reach to foreign countries.
 - 130,000 t of Marine litters have been retrieved from 2011 to 2013 in Japan
 - Government of Japan has struggled to clean coasts by using Subsidy project and collect 1,500 coasts data annually.
 - Government of Japan hopes more advanced international cooperation among NOWPAP membership countries on marine litter problem.

고맙습니다 Спасибо
 Thank you.
 谢谢

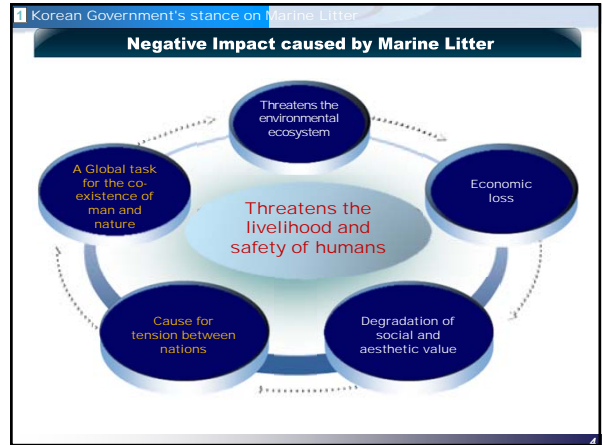
ご清聴誠にありがとうございました。

The Republic of Korea's Marine Litter Management Policy

Content

- 1 Korean Government's stance on Marine Litter
- 2 Marine Litter Management System
- 3 Marine Litter Management Policy

1 Korean Government's stance on Marine Litter

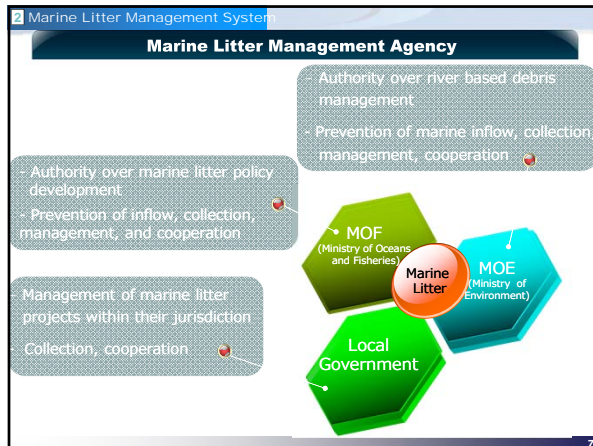


National and International issues relating to Marine Litter

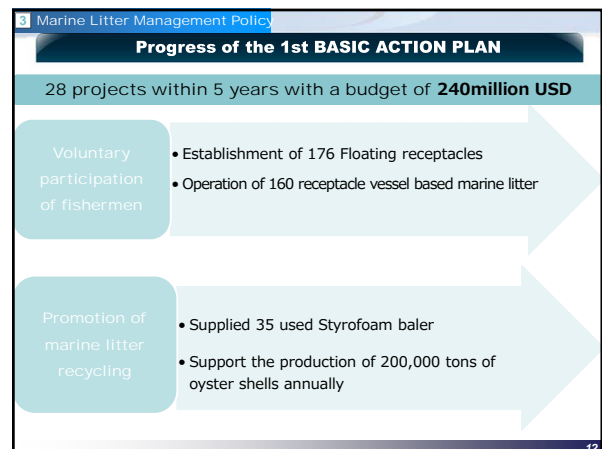
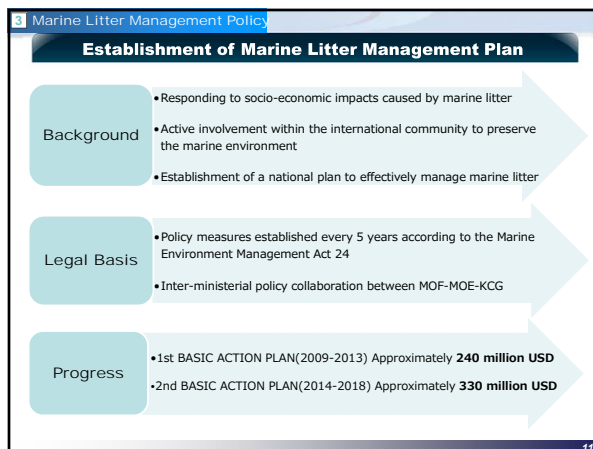
- Strengthened Solidarity**
A movement for a stronger international solidarity about marine litter
- Safety**
Concerns rising from plastic and micro-plastic waste
- International Relations**
Rising tension between nations due to transboundary marine litter
- Climate Change**
The need for effective measures and management for nature disaster based litter caused by climate change

National Management
Civic Solidarity
International Cooperation

2 Marine Litter Management System



3 Marine Litter Management Policy



3 Marine Litter Management Policy

Progress of the 1st BASIC ACTION PLAN

28 projects within 5 years with a budget of 240million USD

Systematic management of marine litter

- National marine litter monitoring at 20 different coastal areas
- Operation of the Marine Litter Response Center and the Marine litter integrated information system

Citizen's participation and strengthening international cooperation

- Development and distribution of marine litter educational manual
- Organizing the annual International Coastal Cleanup Event
- Operation of a marine environment protection pilot school

3 Marine Litter Management Policy

Progress of the 2st BASIC ACTION PLAN

Forecasting 21 projects within the next 5 years with a budget of 330 million USD

Strategic Direction

3 Marine Litter Management Policy

Progress of the 2st BASIC ACTION PLAN

Vision and Objective

Vision: Establishing a productive and safe marine environment without marine litter

Objective: Minimize the cause of marine litter and strengthen a nationwide interest in collection projects; Establishment of a policy infrastructure based on scientific and active marine litter response

Strategy: Focused management of marine litter origin; Strengthening collection projects focused on daily life habits; Enhancement plan for marine litter management basis; Target specific education and public relations programs

3 Marine Litter Management Policy

Progress of the 2st BASIC ACTION PLAN

Promotional Work

Focused management of marine litter origin

- Strengthening used styrofoam buoy management
- Preliminary management of river based marine debris inflow into the ocean
- Distribution of biodegradable fishing equipment
- Promoting a clean fishing community
- Establishment and operation of marine litter Floating receptacles

Strengthening collection projects focused on daily life habits

- Marine waste purification projects
- Coastal marine litter collection projects
- Fishing port litter collection projects
- Port based floating debris collection projects
- Environmental improvement of fishing grounds projects
- Natural disaster marine litter collection and disposal

3 Marine Litter Management Policy

Progress of the 2st BASIC ACTION PLAN

Promotional Work

Enhancement plan for marine litter management basis

- Fishing equipment management system, gear deposit system implementation
- Promote the activities of the Marine Litter Response Center
- Marine litter evaluation guideline, development of an effective statistical analysis
- Expanding the national marine litter monitoring project
- Raising the policy capacity level of marine litter and strengthening an effective governance system
- Expanding the shell based waste recycling

Target specific education and public relations programs

- A national advertisement on marine litter policy
- Promote citizen's participation in coastal cleanup activities
- Target specific education and public relations programs
- Active participation in regional international cooperation

3 Marine Litter Management Policy

Emphasize objectives of the 2st BASIC ACTION PLAN

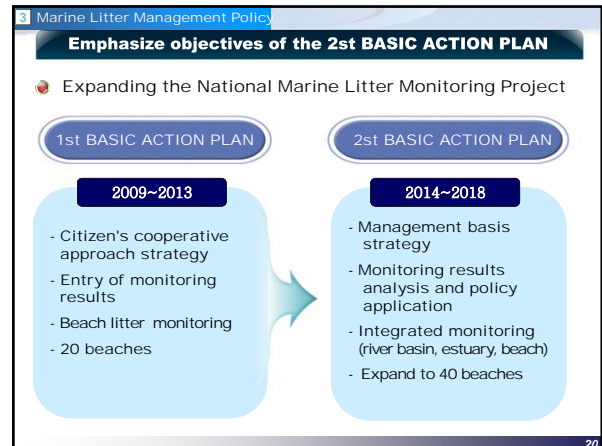
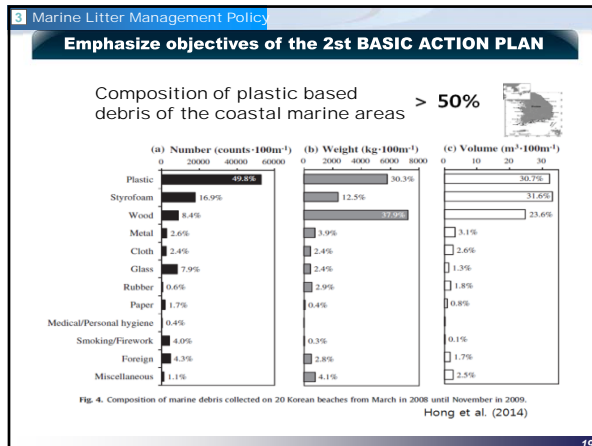
Strengthening response efforts on marine plastic issues

Increased global environmental concern on marine plastic

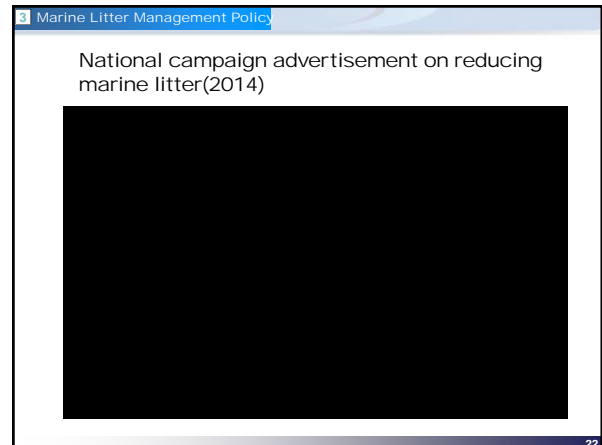
- International Organizations (UN Environmental Assembly, UNEP, UNESCO, FAO), EU
- IOC - Establishing micro-plastic as one of the top 4 global issues in the field of 'marine ecosystem health protection'

The Korean Government's acknowledgement of the problems caused by marine litter

- Conducted basic research on marine plastic issues (Establishment of operation of a marine plastic research team at KIOST)
- Promoting a preemptive and initiative response effect on marine plastic issues
- Development of marine plastic response strategy and response technology



- 3 Marine Litter Management Policy
- Emphasize objectives of the 2st BASIC ACTION PLAN**
- Strengthening coastal marine litter collection management
 - Providing an clean and aesthetic coast
 - Expanding coastal, islands and isolated areas coastal marine litter collection projects
 - Establishing a 'Coastal Clean-up Day'(every other month)
 - Effective collection and disposal of natural disaster marine litter caused by typhoons and floods
 - Strengthening a nationwide advertisement of reducing marine litter
 - Improve participation and develop target specific education and public relations programs
 - Active advertisement utilizing mass media through TV, internet, SNS
 - Target based educational manual development such as student and fishermen focused educational program
 - Publishing white paper on the negative impacts of marine litter, promoting a marine litter advertisement contest on marine litter
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Thank you very much

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INTERNATIONAL COASTAL CLEANUP IN THE RUSSIAN FAR EAST: RESULTS AND PERSPECTIVES



1 Blinovskaya Yana, PhD
Maritime State university named after admiral G.I. Nevelskoy, Vladivostok, Russia


2014 NOWPAP International Coastal Cleanup and Workshop on Marine Litter Management
Boryeong, Korea, 25-26 September 2014



MARINE LITTER MONITORING AND RESEARCH




POSITIVE TRENDS ON RUSSIAN FAR EAST COASTS



ECOLOGICAL EVENTS IN PRIMORSKY REGION



- o Community work day, Russky island
- o Community work day, Artyem city
- o Community work day, Nakhodka city

4

THE PILOT ICC IN RUSSIA, 2007, OCTOBER, 2



- o 50 participants;
- o 44,5 kg marine litter;
- o 1800 m² coastal cleanup.



5

NOWPAP ICC IN VLADIVOSTOK, SEPTEMBER, 2008

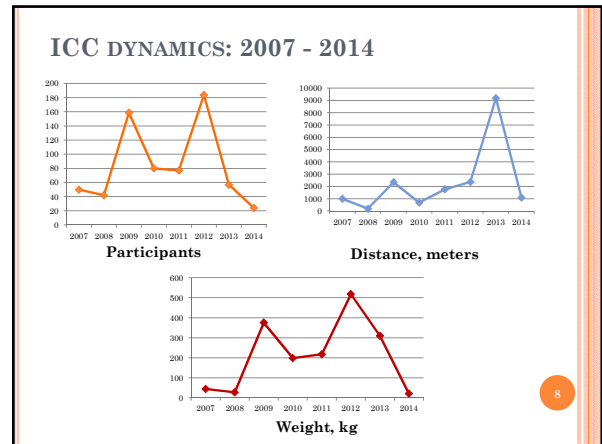
- o 42 participants;
- o 27,7 kg marine litter;
- o 200 m coastal cleanup.



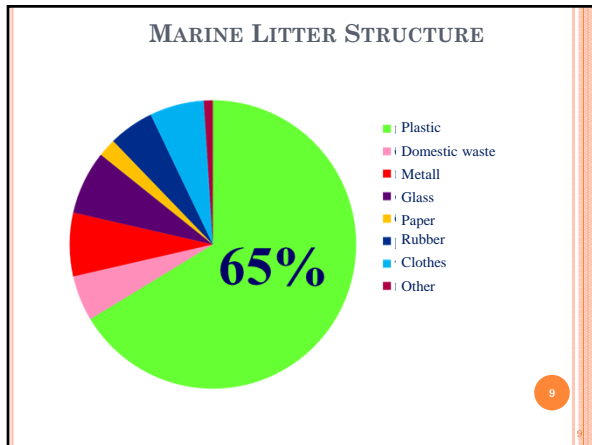
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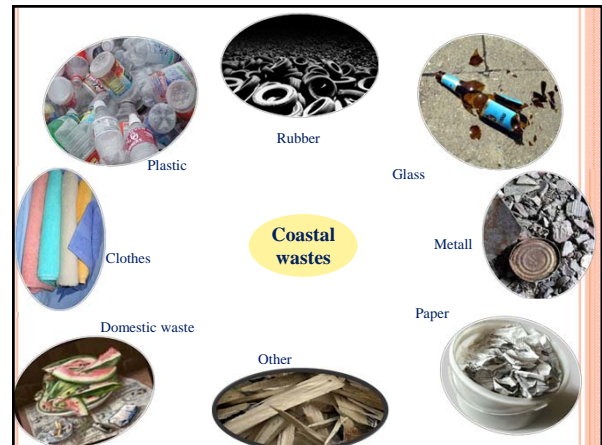
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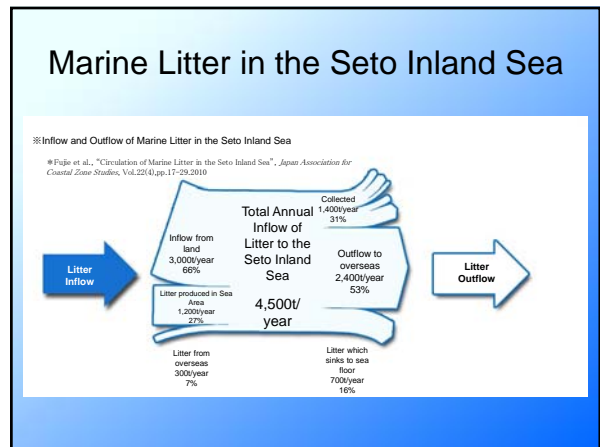
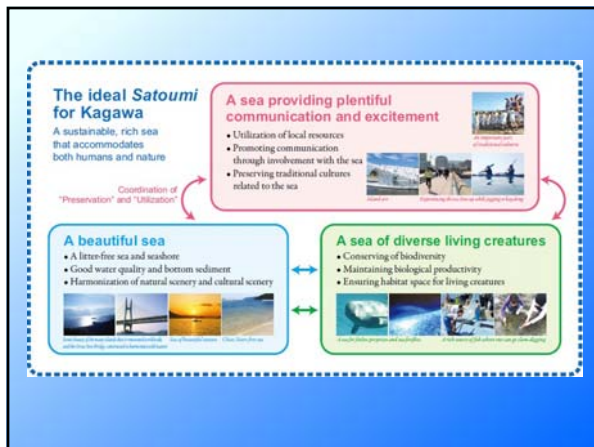
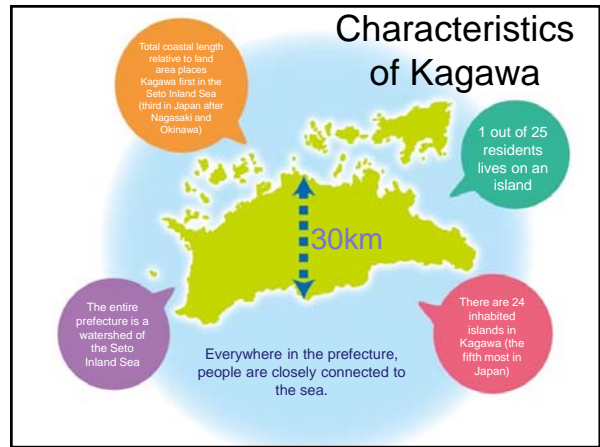
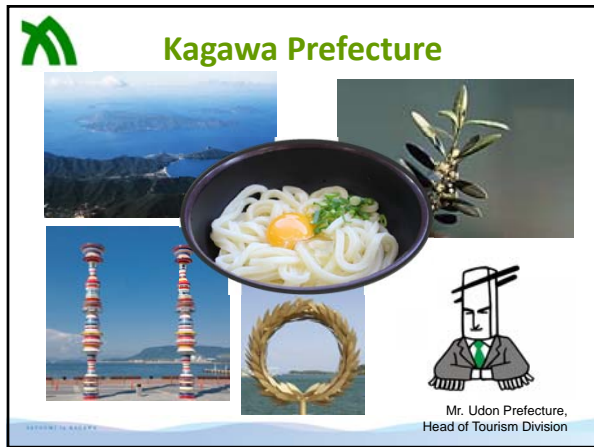
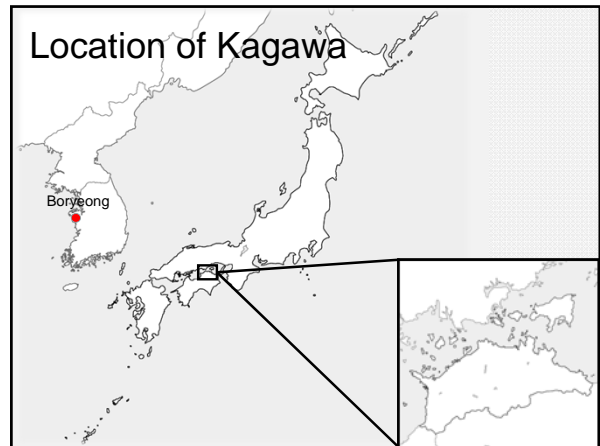
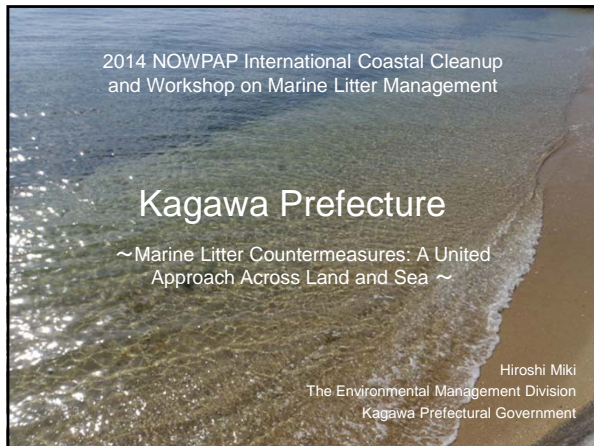


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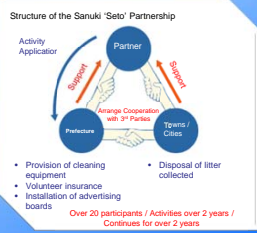




The Beginning of the Marine Litter Prevention Project in Kagawa

- 2002 Kagawa Conference for the Promotion of Measures to Dispose of Dispersed Marine Waste established

Commencement of partnership project
Clean Relay Beach Cleaning



- 2002-03 Dispersed marine waste survey undertaken and map produced using subsidy money from the national government.

Efforts in Recent Years

- 2009 (Washed-Ashore Articles Disposal Promotion Act)
- 2010 Council for the Promotion of Countermeasures to Articles Washed-Ashore established
- 2010~11 National subsidy money used to produce DVD and hold learning experiences
- 2011 Regional plan established – Kagawa Plan for the Promotion of Countermeasures to Articles Washed-Ashore
- 2013 Kagawa Prefecture Council for the Promotion of Measures Against Marine Waste established
- 2013~14 National subsidy money used to conduct survey research, promote awareness, run learning experiences, and develop human resources

First in Japan!

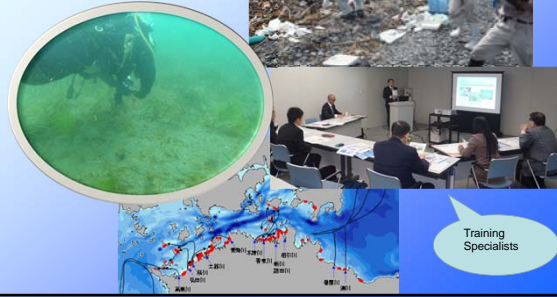
United Efforts Across Land and Sea



Collection and disposal system operated by fisherman, towns and cities, and the prefecture
Implementation of clean strategy to reduce marine litter across mountains, rivers, towns, and the sea

Survey Research

- Field surveys
- Simulations
- Research Associations



Promotion

- TV commercials, newspaper adverts, posters, pamphlet distribution
- Survey app
- Websites



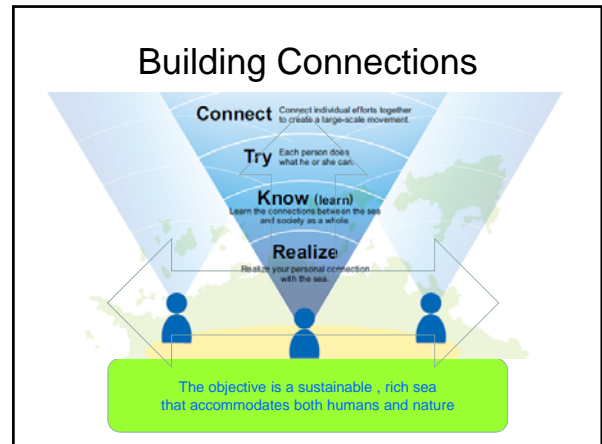
Learning Experiences

Bringing young people to the sea



Developing Human Resources

- Classroom and Practical Learning
- Craft workshops using marine litter



Best practices in dealing with sea-based marine litter in Japan

Atsuhiko Isobe
 Research Institute for Applied Mechanics,
 Kyushu Univ., JAPAN


Our research projects had been sponsored by the Environmental Research and Technology Development Fund, Ministry of Environment, Japan.

Collaborators
 Shin'ichiro Kako (Kagoshima Univ.)
 Hirofumi Hinata (Ehime Univ.)
 Tomoya Kataoka (Nat'l Inst. for Land & Infrastructure Management),

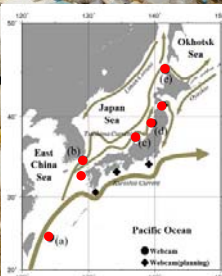
Three keywords

1. Monitoring of marine debris using webcams
2. Back-tracking of marine debris using an ocean reanalysis product
3. Research project for microplastics

For measuring marine debris on beaches... webcams (Kako et al., 2010, MPB; Kataoka et al., 2012, MPB)



We had set webcams on 10 beaches along the East China Sea and Japan Sea coasts. These images were opened to the public on our website



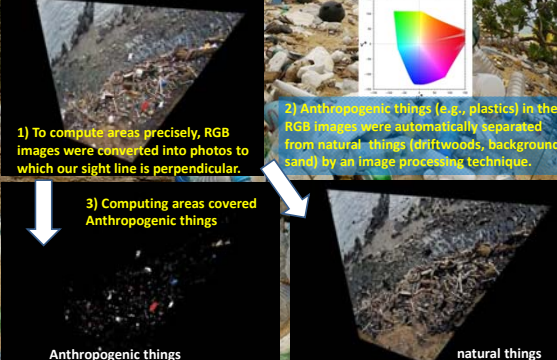
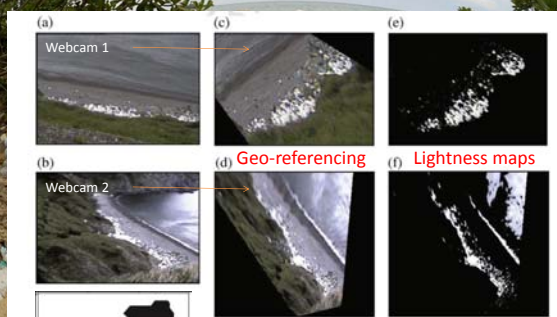
Movies made from photos taken sequentially by a webcam once in each 90 min (May., 2008—Nov., 2009 on Ookushi beach, Japan)



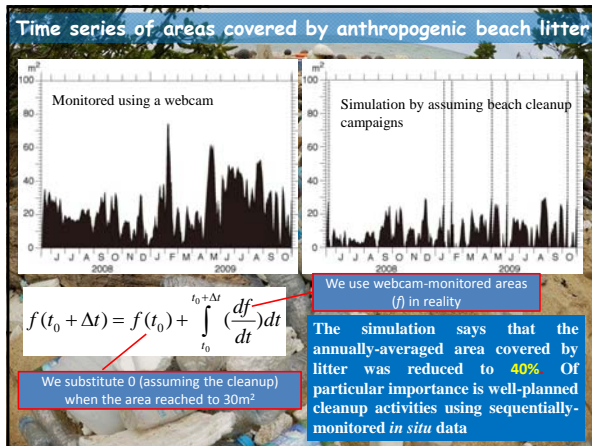
The right movie was made from the converted photos to which our sight line is perpendicular.

For measuring marine debris on beaches... 2. webcams (Kako et al., 2010, MPB; Kataoka et al., 2012, MPB)

- 1) To compute areas precisely, RGB images were converted into photos to which our sight line is perpendicular.
- 2) Anthropogenic things (e.g., plastics) in the RGB images were automatically separated from natural things (driftwoods, background sand) by an image processing technique.
- 3) Computing areas covered Anthropogenic things

We set two webcams at the Ookushi beach (Goto Island, Japan), and computed the areas covered by marine debris on an image of the entire beach (webcam 2) and on an image of short-distance view (webcam 1, high resolution. & small errors).

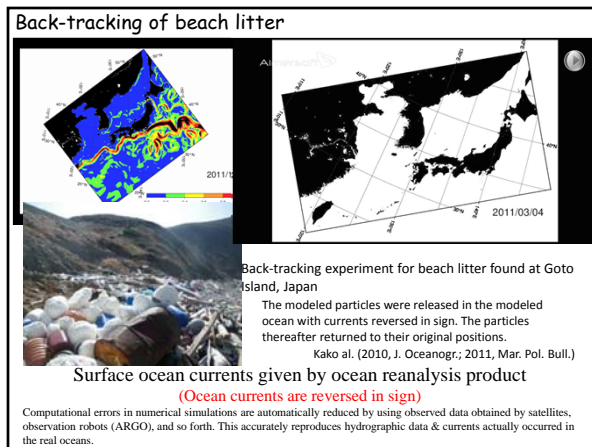
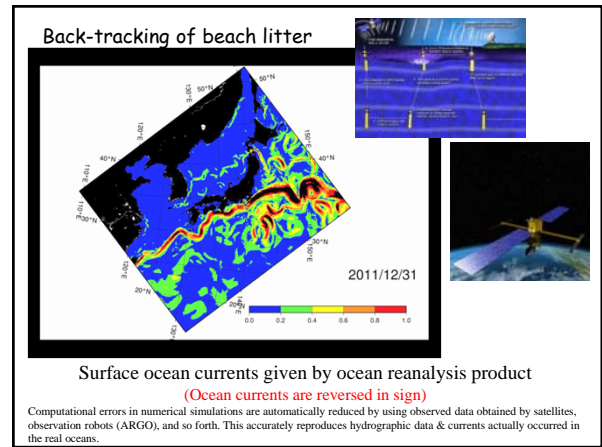
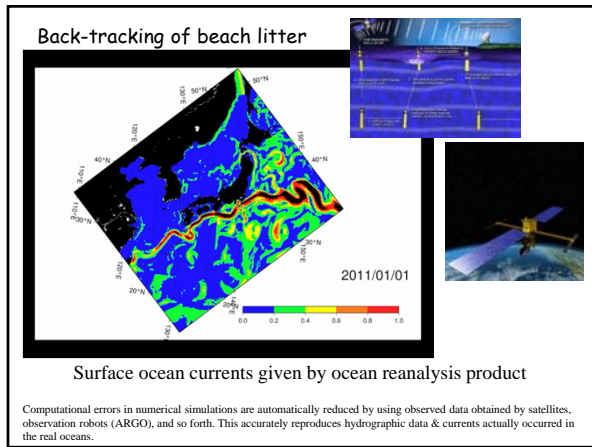


International research project using webcams for Tsunami debris

2014-2016: PICES (NORTH PACIFIC MARINE SCIENCE ORGANIZATION) PROJECT ON "EFFECTS OF MARINE DEBRIS CAUSED BY THE GREAT TSUNAMI OF 2011" funded by MoE, Japan

"Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems" (FUTURE)

<Objectives>
 Researchers from USA, Canada, and Japan attempt to assess influences of invasive species carried by tsunami debris. Our group has a plan to establish a webcam monitoring site along the western coasts of N. America.



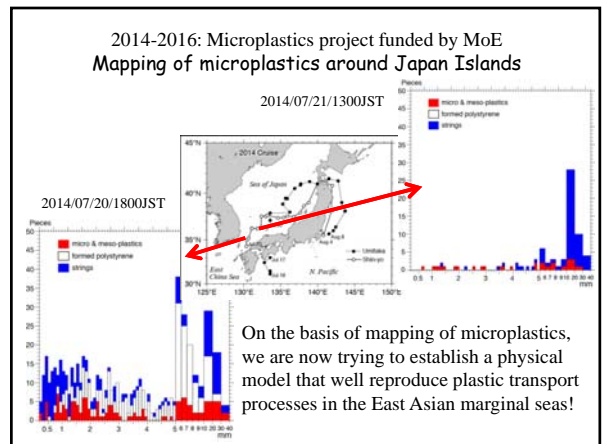
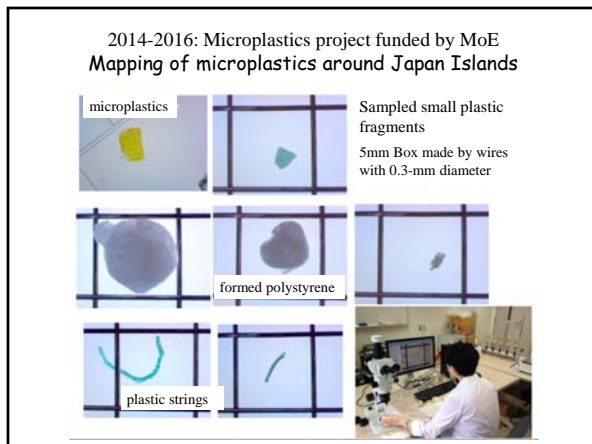
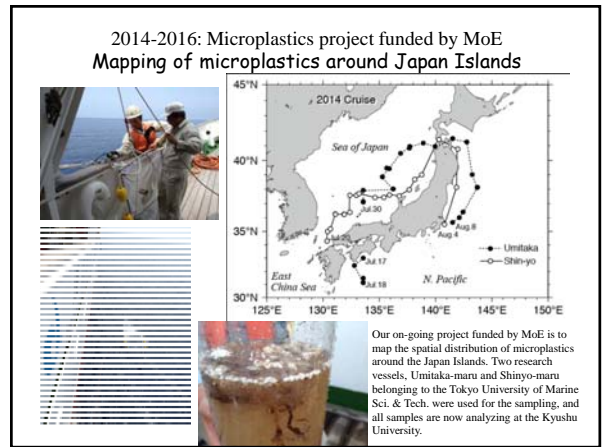
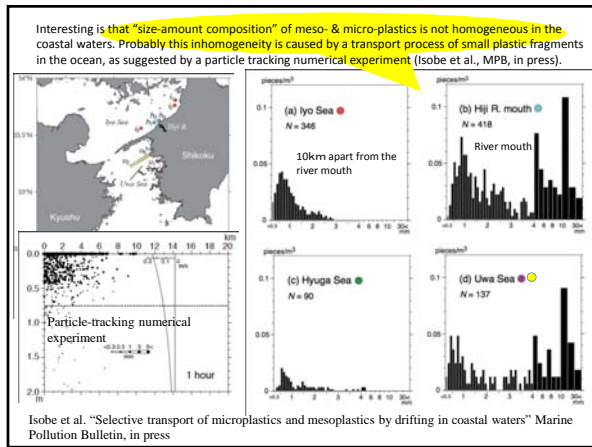
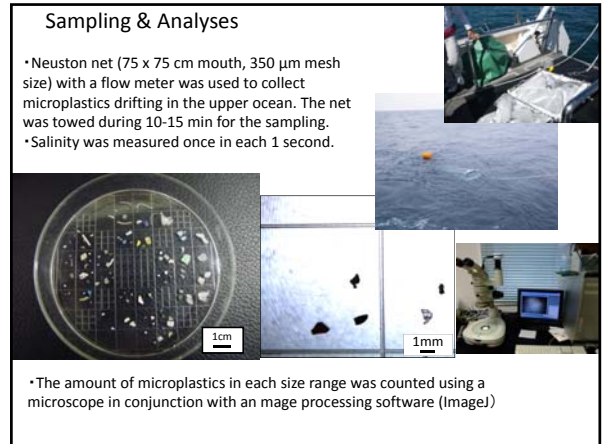
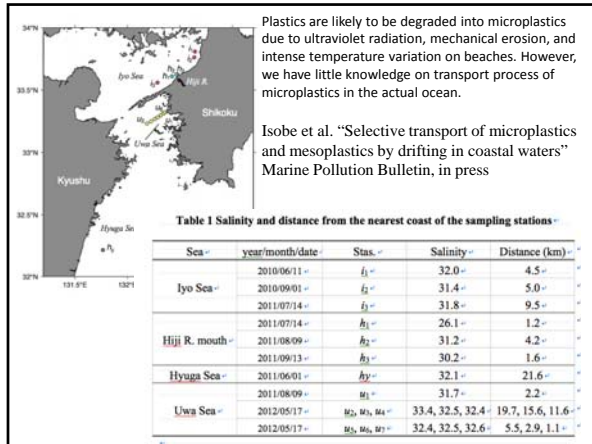
Microplastics as an oceanic pollutant

Stomach of fish collected in the North Pacific, Boerger et al., (2010, MPB)

Stomach of crustacean collected at the Clyde Sea Murray & Cowie., (2011, MPB)

Microplastics found in muscle of bivalves Browne et al., (2008, EST)

In an experiment, liver of fish (Japanese medaka) was damaged by POPs attached on injected microplastics. Rochman et al (2013, SR)



September 26, 2014

NOWPAP ICC Workshop

Marine Debris Management in Chungnam Province

Jong-Gwan JUNG



Contents in a Nutshell

1. Current Status
2. Major Challenges
3. Problem Solving and Alternatives
4. Toward Sustainable Management

Current Status

Chungnam Provincial population

Year	sum	Boryeong	Asan	Seosan	Seocheon	Hongseong	Taeon	Dangjin
2010	888,065	107,363	264,225	160,388	60,152	88,111	63,315	144,511
2020	1,150,000	120,000	400,000	200,000	60,000	90,000	60,000	220,000

- Population ratio : 6.5%(888,065) of national coastline area(2010), population density 228/km²(low compared to national mean 423/km²)
- Ports, industrial complexes, sightseeing, amusement and energy supplying facilities located along the coast
- Decline of fishery and decrease of fishing population due to the development of shore and ocean
- Affluent marine touring resources and excellent shoreline landscape

Current Status

SWOT Analysis of Chungnam Provincial Condition

<ul style="list-style-type: none"> ✓ Image of clean nature ✓ Low land cost and rich in natural resources ✓ Predominant condition for development potential <p style="text-align: center;">Strong</p>	<ul style="list-style-type: none"> ✓ Various development regulation(control of real estate for agricultural conservation) ✓ Aging and population decrease ✓ Vulnerable infra for manufacturing <p style="text-align: center;">Weak</p>
<p style="text-align: center;">Opportunity</p> <ul style="list-style-type: none"> ✓ Linking development with emerging China ✓ Expansion of infra ✓ Innovation of spatial structure 	<p style="text-align: center;">Threat</p> <ul style="list-style-type: none"> ✓ Younger population drain ✓ Global economic bailout ✓ Loss of inherent identity

Current Status



Floatable debris heap, abandoned drill shell, wrecked ship

Current Status



Waste tire Construction plywood

Waste fabric & plastics Compact styrofoam



Status of budget for collection (unit : million KRW)

2009~13 Total Budget : 27,326 million won

Division	Total	2009	2010	2011	2012	2013	Note
total	12,585	2,455	2,972	2,426	2,482	2,250	Marine debris
Purchasing in operations	2,452	480	480	480	492	520	
Ship collection	378	-	182	36	80	80	
Shoreline cleanup	5,255	475	1,560	1,160	1,160	900	
Harbors & Islands	4,500	1,500	750	750	750	750	
Disaster wastes	3,491	-	2,780	240	471	-	Floatable debris
Environmental improvement of fishing ground	11,250	-	2,800	2,830	2,830	2,790	Aqua culture

Collection record (unit : ton)

Division	Total	2009	2010	2011	2012	2013	Note
total	20,443	6,153	3,778	3,799	3,442	3,271	marine
Purchasing in operations	3,617	815	658	773	600	771	
Boryeong	459	104	101	92	53	109	
Seocheon	1,363	265	218	284	301	295	
Hongseong	515	148	96	124	25	122	
Taeon	1,280	298	243	273	221	245	
Sunken fishing net	1,643	198	594	461	285	105	
Boryeong	1,415	165	522	388	235	105	
Taeon	228	33	72	73	50	-	
Harbors & Islands	15,183	5,140	2,526	2,565	2,557	2,395	
Boryeong	5,964	2,826	929	803	750	656	
Seosan	541	159	-	-	234	148	
Dangjin	750	208	249	146	69	78	
Seocheon	914	218	175	180	168	173	
Hongseong	822	292	202	102	121	105	
Taeon	6,192	1,437	971	1,334	1,215	1,235	
Ship collection	10	-	5	1	2	2	
Seosan	3	-	1	-	1	1	

Collection record (unit : ton)

Division	Total	2009	2010	2011	2012	2013	Note
Disaster wastes	7,019	-	4,940	538	1,541	-	Floatable
Boryeong	1,066	-	1,066	-	-	-	
Asan	31	-	31	-	-	-	
Seocheon	3,064	-	1,604	538	922	-	
Hongseong	480	-	383	-	97	-	
Taeon	2,378	-	1,856	-	522	-	
Environmental improvement of fishing ground	4,384	-	793	1,538	908	1,145	Aqua culture
Boryeong	787	-	286	61	272	168	
Seocheon	182	-	59	-	123	-	
Hongseong	71	-	-	31	21	19	
Taeon	3,344	-	448	1,446	492	958	

Estimation of Shoreline Drifted Wastes and Treatment Cost (unit : million KRW, 2013)

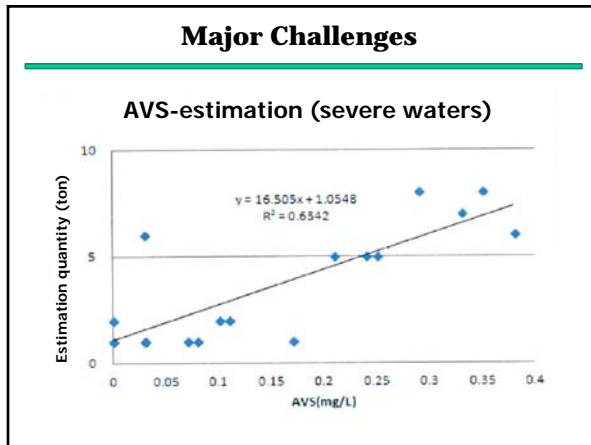
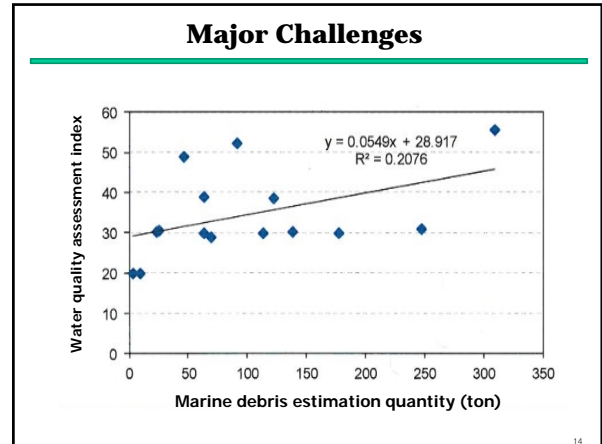
Division	Estimated Quantity(ton)	Estimated Cost	Area		Note
TOTAL	12,025	3,446	shoreline 61	islands 17	
Boryeong	1,750	520	shoreline 6	islands 8	
Asan	100	30	shoreline 1	-	
Seosan	300	105	shoreline 6	islands 2	
Dangjin	125	95	shoreline 5	islands 3	
Seocheon	5,500	1,490	shoreline 18	islands 1	
Hongseong	150	82	shoreline 5	islands 1	
Taeon	4,100	1,124	shoreline 20	islands 2	

Floatable debris disposal quantity and cost by year

Year	Collection (ton)			Required cost (million KRW)		
	sum	Seocheon	Gunsan	sum	National expenditure	Regional expenditure
sum	10,941	8,679	2,262	2,424	1,601	823
2013	1,894	1,700	194	504	353	151
2012	1,939	1,663	276	480	336	144
2011	2,058	1,790	268	480	336	144
2010	2,351	1,799	552	480	336	144
2009	2,699	1,727	972	480	240	240

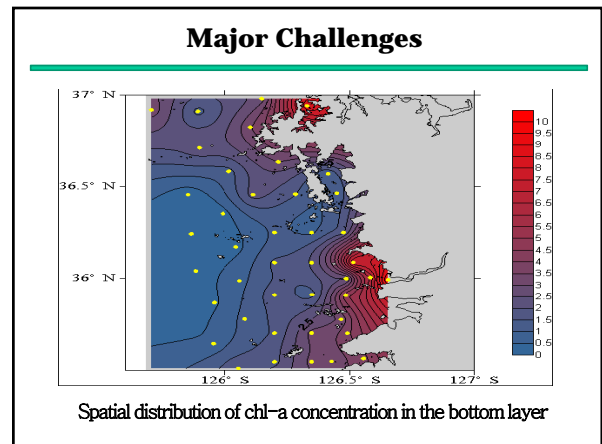
Share of expenses by year (million KRW)

	sum	Regional							National ratio (%)
		National ME	sum	Daejeon	Chungbuk	Chungnam	Jeonbuk	Seocheon	
sum	2,424	1,600.8	823.2	117.36	124.08	492.96	81.6	7.2	
2013	504	352.8	151.2	20.7	21.9	87.0	14.4	7.2	70
2012	480	336.0	144.0	20.7	21.9	87.0	14.4	-	70
2011	480	336.0	144.0	20.7	21.9	87.0	14.4	-	70
2010	480	336.0	144.0	20.7	21.9	87.0	14.4	-	70
2009	480	240.0	240.0	34.56	36.48	144.96	24.00	-	50

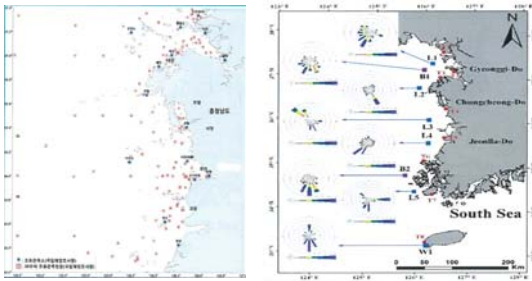


Major Challenges

	transparency	DO	DIN	DIP	Chl-A	AVS
Waters mean	0.012	0.100	0.127	0.021	0.033	0.052
Severe waters	0.068	0.064	0.065	0.066	0.102	0.634
Non-severe waters	0.013	0.018	0.042	0.022	0.018	0.352



Problem Solving and Alternatives



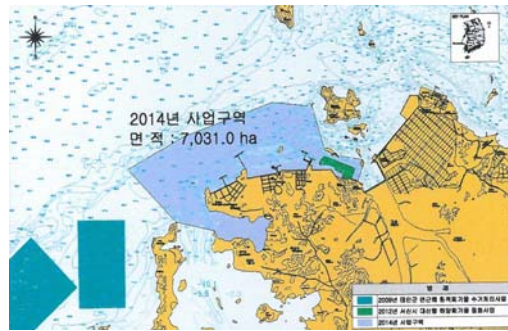
Tidal height observation and wind rose for catch hold of marine debris

Problem Solving and Alternatives

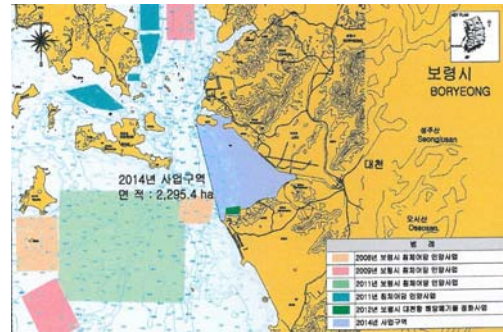


Daesan port survey planning map

Problem Solving and Alternatives



Problem Solving and Alternatives

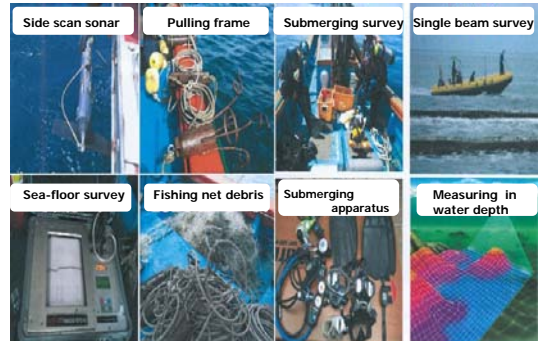


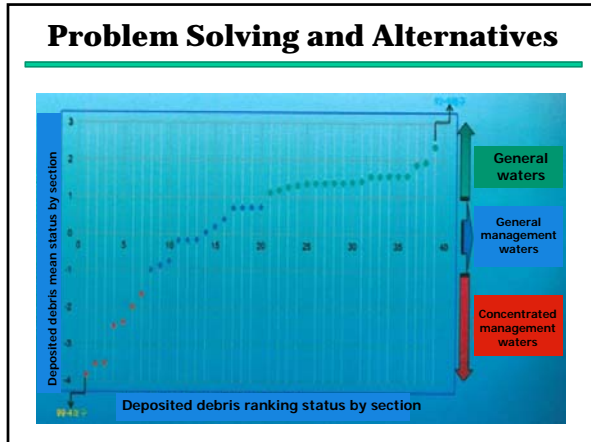
Problem Solving and Alternatives



Both sides sonic scan survey, pulling out survey, submerging survey

Problem Solving and Alternatives





Problem Solving and Alternatives

factors ¹⁾	sum	Daejeon	Sejong	Chungbuk	Chungnam	Jeonbuk	weight ²⁾	
contribution(% ³⁾)	100.0	12.1	7.2	23.9	52.0	4.8	0.379	
Popula-tion	number	3,026,854	1,483,858	93,932	952,708	459,645	36,704	0.217
	%	100.0	49.0	3.1	31.5	15.2	1.2	
basin	₩	5,654.4	438.7	442.9	1,416.8	2,996.9	359.1	0.197
	%	100.0	7.8	7.8	25.1	53.0	6.3	
degree of self-finance	number	376.14	77.5	76.89	76.37	75.47	69.91	0.207
	%	100.0	20.6	20.4	20.3	20.1	18.6	
partial share of polluters ⁴⁾	100.0	21.0	9.2	25.0	37.6	7.2	0.596	
partial share of treaters ⁵⁾	100.0	0	0	0	83.4	16.6	0.404	
determined share of finance ⁶⁾	100.0	12.5	5.5	14.9	56.3	10.8	-	

- ### Problem Solving and Alternatives
- 1) ME, National Waste Generation and Disposal, 2013
ME, National Survey on Pollution Sources, 2013
MSPA, Data on Finance, 2013
 - 2) Estimated by the MAUT(Multi Attribute Utility Theory) method, and applied the expert AHP and makeup questionnaire
 - 3) (contribution of living waste generation×measured weight) + (contribution of vegetation waste generation×measured weight)
 - 4) (contribution of floatable debris×weight) + (population× weight) + (basin×weight) + (degree of self-finance×weight)
 - 5) treaters share of pollution/(Chungnam polluters share + Jeonbuk polluters share)
 - 6) (partial share of polluters×polluters weight) + (partial share of treaters×treaters weight)

- ### Toward Sustainable Management
- **Standardized Process**: widely recognized by scientists at regional, national and international level prior to the draw out the social consensus
 - **Shoreline cleanup assessment**
 - i. To prove the impact
(& relating fluctuation to the marine debris generation)
 - ii. To quantify the natural resource value due to marine debris
 - iii. To assess recovery from the shoreline cleanup
 - iv. To argue for cleaning or not, for stopping cleanup operations
 - v. To build a compensation file... etc

- ### Toward Sustainable Management
- ◆ Management should be done properly in accordance with the basic attribute of sea waters prior to valuation, scientific approach and due process.
 - ➔ First, Provision of **sustainable governance**
 - ➔ Second, Provision of **integrated waste management**
 - ➔ Third, Solving the problem from **original matters**
- In the context of **social equity, economic efficiency and environmental soundness**, solving the marine debris problem should be considered to putting together in policies and plans.

- ### “What are needed for cleanup?”
- First, **Preparedness** for shoreline cleanup
: Effective disposition of resources and practical use
 - Second, **Primary coping** with new situation
: Imminent arrangement according to forecastable scenario
 - Third, **Reconnaissance and evaluation**
: considering priority
 - Fourth, **Fixation of preventive measure**
: Decision making in regional consensus

Where should we go?



Toward Sustainable Management

*Time and tide waits for no man, but for **change!***



True changes show up just at the critical moment!

32

Happy Change,
New Chungnam!



**GET HAPPY! IT'S GOOD
FOR YOU!**

EXPERIENCE OF MARINE LITTER MONITORING IN VLADIVOSTOK PORT AREA

M. Vysotckaia, S. Moninets,
Ya. Blinovskaya, D. Zadoya



Equipment

Sony Cyber-shot DSC-H20
10.10 MP, 10x zoom
Carl Zeiss Vario-Tessar

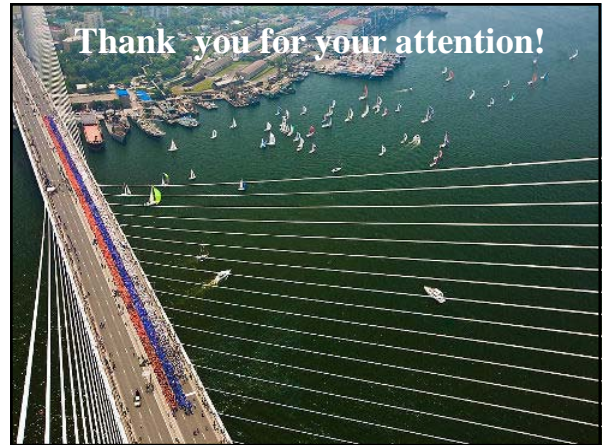
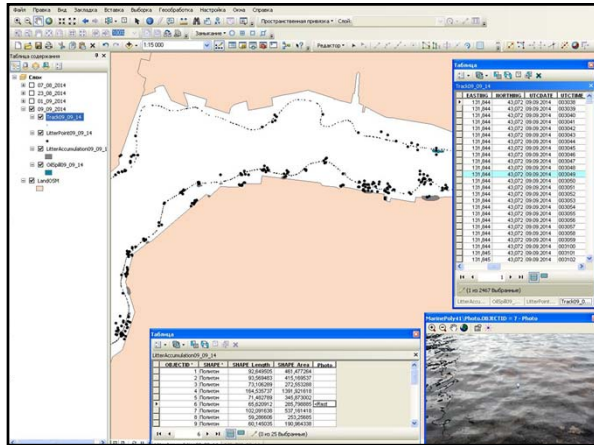
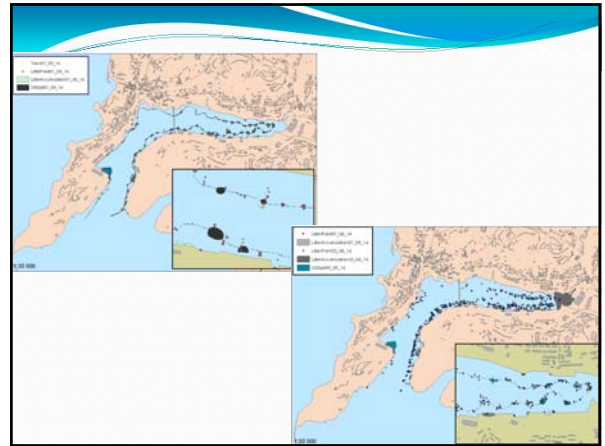
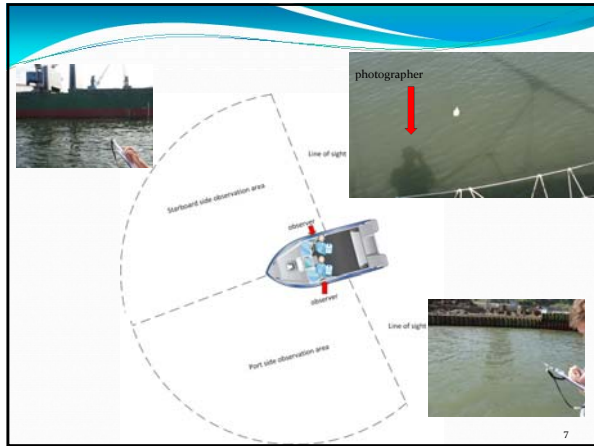
Sony DCR-SX60E
4MP, 60x zoom
Carl Zeiss Vario-Tessar

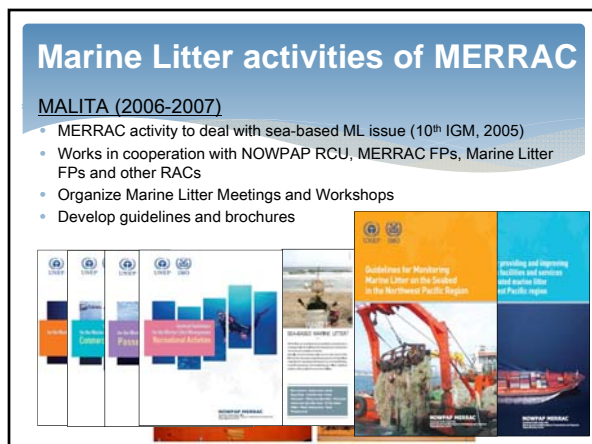
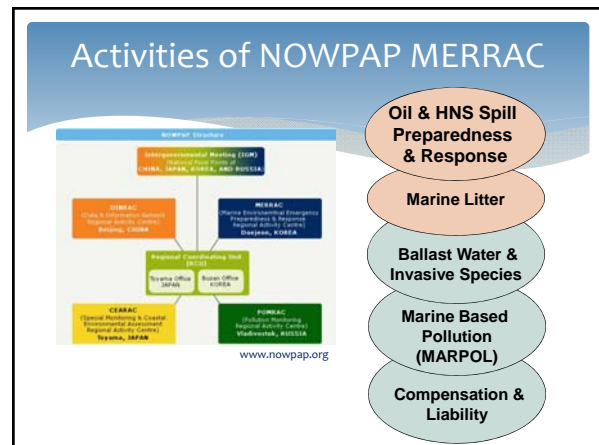
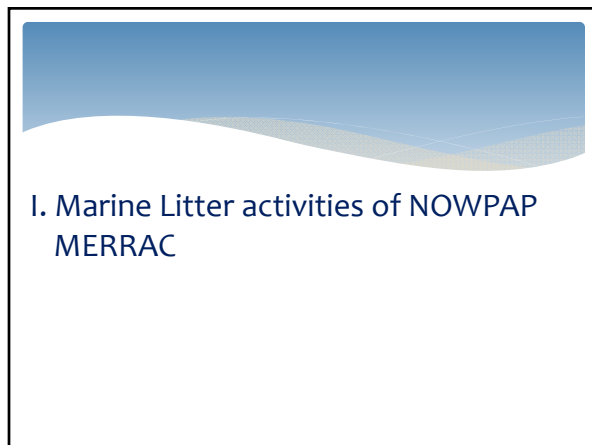
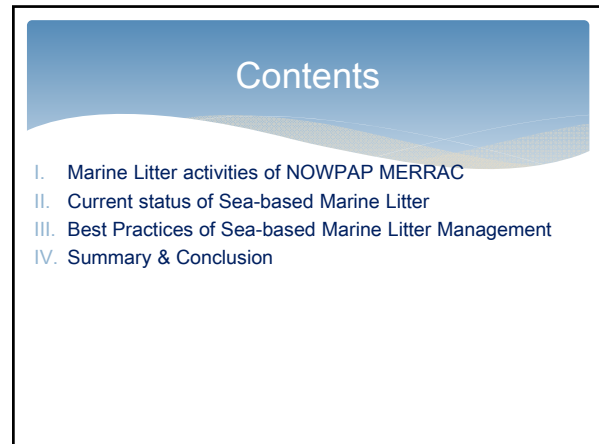
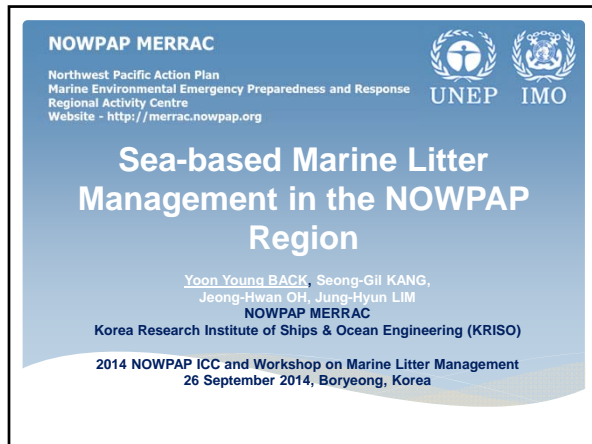
ASUS MyPal A639
Swivel GPS Patch Antenna

Garmin GPS device

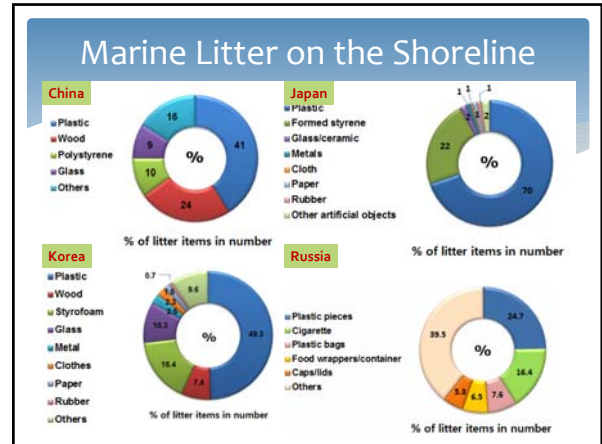
Hand holding a clipboard with a checklist







II. Current status of Sea-based Marine Litter



Marine Litter on the shoreline gives negative impact on tourism and recreational activities

Collection of injection needles discarded on the beach (Shikoku Newspaper, 2004)

Littered beaches (upper left, Vladtime, 2010; upper right and bottom left, Novostivi, 2010 bottom right, Primamedia, 2010)

Marine Litter on the Seabed

Negative Impacts on Fishing Activities and Aquaculture

Dead blue crab entangled in derelict nets (SBS News, 2004)

Dead fish by 'ghost fishing' (Joongang Daily, 2013)

Negative Impacts on Marine Ecosystems, Habitats and Biodiversity

Damage to the local ecosystem (Bo Pardau)

Sea turtle entangled in derelict nets (Yonhap News Jeku, 2010)

Country	Plastic	Rubber	Others
China	41%	31%	28%
Korea	24%	18%	58%

Floating Marine Litter

Vessel propeller entangled in marine litter (Ocean Conservancy (top) NPEC, 2008 (bottom))

Country	Styrofoam & plastics	Wood items	Paper	Others
China	83%	1%	1%	15%
Korea	31%	1%	1%	67%

Plastics consistently make up 50% of all marine debris in the NOWPAP region

- Once plastics reach the ocean, about half of plastic debris floats and can therefore **travel on currents** for thousands of miles & become widely dispersed over the oceans (Derraik 2002)

Floating plastics observed in 2007 (JMA)

Average distribution of floating plastics between 1981 and 2000 (JMA)

coastal beaches surveyed on the floating and washed ashore marine litter (NPEC)

Number of Negative Impacts of Marine Litter

Category	Impact	China	Japan	Korea	Russia	Total
Fishing activities and aquaculture	Damage of fishing gear facilities		1			1
	Damage of aquaculture facilities		1			1
	Interruption of fishing operation		2			2
	Human casualties (death, injury, disease, etc.)			2		2
Marine ecosystems, habitats and biodiversity	Ghost fishing	1	2			3
	Destruction of habitat of marine organism		2		1	3
	Decrease of fishery resources		1	3		4
Ship accident	Entanglement	2	1	7		10
	Sailing delay			3		3
	Breakdown/repair of vessel	1	46	59		106
Tourism and recreational activities	Sinking and deadly accidents			1		1
	Hazards to beach goers, swimmers and divers	1	1	1		3
Tourism and recreational activities	Destruction of aesthetic value	6	5	5	14	30
	Costs for removal					
Total		11	60	83	15	169

III. Best Practices of Sea-based Marine Litter Management

Collection system (Korea)

Buy Back Program

- Encourage fishermen to bring back by **economic incentives**
- Expansion of the program to **12 major ports in Korea**
- Purchase of **30,959 tons** of litter between 2009 and 2012 with investments of **USD 20 million** by central and local government
- Saving of about **USD 35 per ton**

4L-USD 4 100L-USD 10 200L-USD 20 (MOF)

Collection by Floating Receptacles

Haenam, Korea, 2009 (MOF)

- Encourage fishermen's **volunteerism** for marine litter collection
- Easy accessibility** to the collection facility
- 128 barges** with total investment of **USD 3.7 million (2010-2012)**

Clean Fishery Program

- Encourage fishermen to **voluntarily bring back** garbage originated from ships and bilge water

Environment-friendly disposal (Japan, Korea)

EPS floats:

If not managed properly, disintegrate into pieces Or scatter along the beaches after drifting at sea, causing many environmental problems.

Compacting EPS Floats by Portable Compressor

Use of portable compressor in Korea (KOEM)

- Introduction of portable wasted EPS floats compressor at the fishing Ports near mariculture areas
- Total compressing of 183 of floats (2003-2012) in Japan
- About 85.7% of total EPS production including floats is recycles in over 133 stations (Japan)
- Fixed and mobile types of thermal volume reduction system (5-35 between 2003-12)

Portable compressor of EPS floats (Styros Buoy, Elcom Co. Ltd-Japan)

From the Conventional EPS Floats to High Durability Floats

Introduction of the use of "Power Floats" (Tarumizu City of central Kagoshima Bay in Japan)

- Easier to handle and recycle, longer period of service w/o fragmentation

Research & Development

Biodegradable fishing gear (NFRDI, Korea)

- Fishing gear is mostly synthetic and **resistant to degradation** in the water
- Cause **'ghost fishing'** and **economic damage**
- NFRDI developed biodegradable fishing gear which starts degrading **after 2 years (up to 7 years)**

Fiber Reinforced Plastic Vessel Melting Treatment system (KRISO, Korea)

- Synthetic materials made of a polymer matrix reinforced with fibers
- High cost and complicated disposal method
- Abandoned illegally around coasts and harbors
- Hamper vessel traffic and threaten the marine environment and human habitat
- 60,000 FRP vessels at present
- System will be introduced within 2-3 years

Policy-based management (China, Russia)

Marine Litter Management in China's Coastal Cities

Reinforcement of port sewage and garbage management in Dalian

- Full use of port's shipping service and port-stationed companies for the ship garbage management
- 7800 ships serving the garbage discharge/year, receiving more than 6,000 tons of ship garbage

- The special plan of marine environmental sanitation in Xiamen
- Establishment of Xiamen Offshore Environment Sanitation Management Center
- Setting up marine environmental sanitation base, equipped with facilities and personnel
- Setting up offshore ship-based garbage collection system → **dramatic decrease of marine litter in Xiamen**

Ship Waste Management in Russia

- Effective and systematic management system for collection and recycling of ship waste
- Specialized litter collection vessels operating (2 in Vladivostok, 7 in Vostochny and 2 garbage collecting vessels in Vaninsky)

Collection of waste from vessels in Vladivostok port

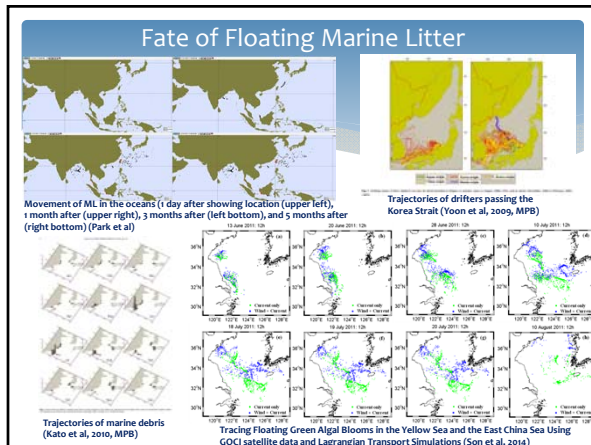
IV. Summary & Conclusion

In the NOWPAP region,


- ◆ Sea-based ML causes **direct and indirect impacts** on marine environment and ecosystems and human activities
- ◆ Sea-based ML issues addressed at **national level**
 - amendment and enactment of domestic laws and regulations
 - adoption of policies and strategies by central and local government
 - Research & Development
- ◆ In line with national efforts, the region has also tried to seek ways to fight against sea-based ML issues
 - development of guidelines & brochures
 - compilation of negative impacts of sea-based marine litter
 - compilation of best practices of sea-based ML management etc.

Suggested actions

- ◆ **Regular and frequent monitoring & range of monitoring**
 - Collection of accurate statistics through systematic surveys
 - A common classification system by members for objective analysis
- ◆ **Strengthening Regional/international cooperation**
 - Exchange of information and sharing of best practices and its results
 - Promotion of public awareness activities at regional level
- ◆ **Analysis and evaluation of the sources of marine litter in the NOWPAP region**
 - MERRAC RAP MALI project (2014/2015) on **'Understanding of Floating Marine Litter Distribution and Impacts in the NOWPAP Region'**
 - To understand the seriousness of the floating ML and identify prospects for effective management and solution of floating ML by assessing the distribution and impacts of floating ML
 - Through collection and assessment of data on ML distribution and ML drifted from foreign countries (mapping hotspots)
 - Outcomes: understanding of inflow rate of sea-based ML, distribution of floating ML, fate of floating ML



Thank you ☺




**NORTHWEST PACIFIC
REGIONAL NODE OF THE
GLOBAL PARTNERSHIP ON
MARINE LITTER**

NOWPAP CEARAC
Northwest Pacific Region Environmental
Cooperation Center (NPEC)
Takafumi YOSHIDA


**NORTHWEST PACIFIC REGIONAL
NODE ON THE GLOBAL PARTNERSHIP
ON MARINE LITTER**

- NWP Regional Node is established with the support by UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA).



**NORTHWEST PACIFIC REGIONAL NODE OF THE
GLOBAL PARTNERSHIP ON MARINE LITTER**

- This regional node aims
 - to enhance awareness of marine litter prevention actions at the national, local and grass-root levels
 - to strengthen exchange information on best practices and measures for prevention of marine litter input among the NOWPAP member states and beyond through Global Partnership on Marine Litter, and
 - to enhance knowledge of GPML among local governments, NGOs/NPOs and local people in NOWPAP member states.



- http://www.npec.or.jp/NWPacific_node/




KOEM MALi
Korea Marine Environment Management Corporation

Collaboration on Marine Litter Monitoring among NOWPAP countries

2014. 09. 26

MALi Center
KOEM


HO-Jeong CHOI



MALi


Contents

1. Marine Litter Monitoring around the world
2. New development of marine litter monitoring in RO Korea
3. Suggestion for the regional monitoring network and programme



MALi

1. Marine Litter Monitoring around the World



MALi

ICC for global marine litter data collection

- ICC has been the only global programme on marine litter monitoring since 2001
 - 92 countries participated in 2013



Item	Quantity
Plastic Bottle	441,493
Plastic Bottle Cap	394,796
Plastic Bottle (Other)	389,088
Plastic Bottle (Other)	340,170
Plastic Bottle (Other)	268,746
Plastic Bottle (Other)	247,072
Plastic Bottle (Other)	229,007
Plastic Bottle (Other)	229,007
Plastic Bottle (Other)	229,007
Plastic Bottle (Other)	229,007

MALi

Programmes and Guidelines on marine litter monitoring


- UNEP/IOC Guidelines on Survey and Monitoring of Marine Litter (2009)
- OSPAR Convention – North-East Atlantic Sea
- NMDMP(USA, Ocean Conservancy)
- AMDS (Australia)



MALi

Monitoring in NOWPAP region

- No regular monitoring programme except for RO Korea
 - Only ICC event and ad hoc project for marine litter monitoring activities
- Need to set up an regional programme for marine litter monitoring



Source: NPEC 2014




2. Recent Development of Marine Litter Monitoring in RO Korea





RO Korea's National Marine Litter Monitoring Programme

- Legal basis: Marine Environment Management Act, Article 5 and 24
- Policy basis: 2nd Comprehensive ML Management Plan
 - Sectoral plan of Comprehensive Marine Environment Plan
 - Duration: 2014-2018
- Major contents
 - 20 sites in RO Korea for 6 time (bimonthly)
 - Data card identifies 100 litter items
 - Local and foreign origin
 - Sites expansion





Implementing Mechanism



해양수산부
MINISTRY OF OCEANS AND FISHERIES

Policy center



Implementing Agency

ML Consulting firm
NGOs

Executing entities


Regular programme

- National Marine Litter Monitoring Programme (2008 ~)
- International Coastal Clean-up (2001 ~)

Ad-hoc programme

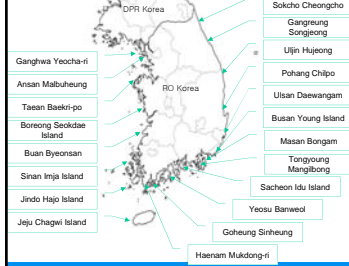


- Foreign-origin Marine Litter Monitoring Programme (2010 ~ 2012)

Scientific and precise Marine Litter data



Monitoring Sites and Implementation

- 20 sites (2008-2014)
- 19 NGOs around the nation
- 6 times/year (Month 1, 3, 5, 7, 9, 11)

Implementing Process

MALI Center

Supervision of the Monitoring Programme

↓

Consulting Firm

Monitoring Administration

Data analysis

Reporting

↓

19 NGOs

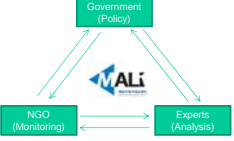
Volunteers gathering


Conducting survey

Data card compilation

- Monitoring by NGOs and public
- Data analysis by experts
- Financial support by Government



Synergy among stakeholders





Monitoring Method

- Monitoring Guidelines
- 100 m stretch at an undisturbed coastal area
- Data card
 - 100 items
- Timing: Bi-monthly (month of 1, 3, 5, 7, 9, 11)

Expansion of monitoring sites

- 20 sites (-2014) to 40 sites (2015-)
 - Study for additional 20 sites are undergoing

Region	Current	2015-
1	4	8
2	4	9
3	7	13
4	5	8
Total	20	40

Marine Litter Data Management and Service

MALI Marine Litter Information System

3. Suggestion for Regional Monitoring Network and Programme

Building regional network of marine litter monitoring

- A network of NGOs involved in marine litter monitoring
 - 4 NGOs in each NOWPA country
 - 4 monitoring sites per country
- Funding by NOWPAP countries
 - NOWPAP countries contribute monitoring
- Secretariat provided by KOEM
 - MALI Center provide service for the monitoring network of NOWPAP region


Issues to be solved by the Marine Litter Monitoring Network

- No information about the Pick-up Per Unit Effort (PUPUE)
 - Most of the monitoring programme is associated with general public for awareness building
 - Thus, scientific data collection is mostly not possible
- Varied Litter Classification (various monitoring card)
 - Simple ICC data card
 - Complicated national monitoring cards (eg, Korea, NPEC etc.)
- Varied spatial and temporal monitoring
 - Seasonal variation
 - Site differences

A major factor that limits our understanding of (and therefore the ability to manage) marine litter, is the lack of clearly identified objectives and inconsistencies in sampling design and litter classification systems between litter surveys. These inconsistencies are such that they prevent or severely confound the analysis of spatial and temporal patterns (UNEP 2009)


Possible Programme for Regional ML Monitoring Network

- Designating monitoring sites at each NOWPAP member country
 - 4 sites each country
 - Monitoring 6 times a year per site
- Developing a unified monitoring card
 - For scientific monitoring and analysis of marine litter
- Co-monitoring by trained NGO personnel at each site
 - Experts from NOWPAP countries participate monitoring of sites every year
- Developing database for regional monitoring sites
 - MALI Center acting as data depository
- Data analysis workshop and training
 - Report at the NOWPAP ICC event and workshop




Benefits of Regional Monitoring Programme

- Enhancing collaboration between countries
- Increasing public awareness within the region
- Training of monitoring personnel
- Gathering of scientifically sound marine litter data
- Empowering NGOs
- NOWPAP regions' Global leadership in marine litter management



Improved management interventions



Thank you!

NOWPAP ICC and Marine Litter Workshop
Boryeong, RO Korea
25-26 September 2014



ICM: Platform for International Cooperation on Marine Litter Management

Daisy Padayao
PEMSEA Resource Facility




Outline

- PEMSEA
- ICC in PEMSEA ICM Sites
- ICM and Marine Litter Management (ICC)
- ICC in the Philippines
- ICC in Bataan
- ICC in other ICM sites in the Philippines

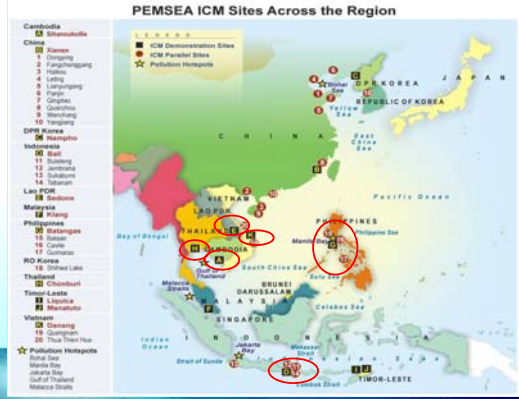
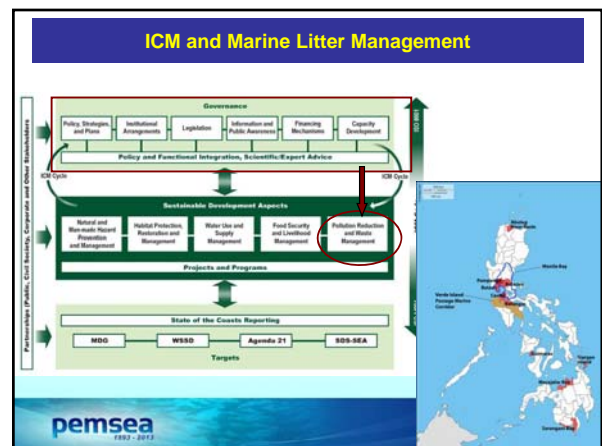
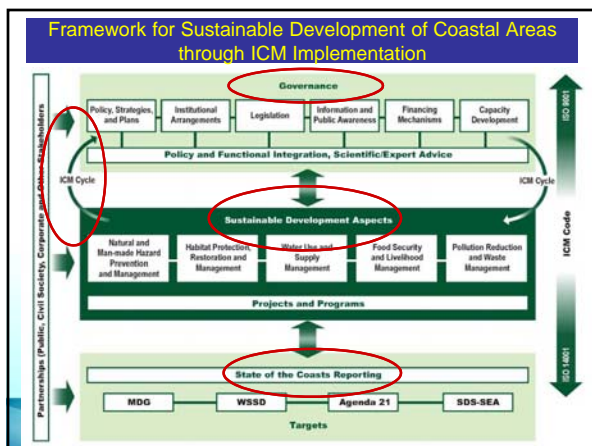



- ▶ Marine Pollution Prevention and Management in the East Asian Seas (MPP-EAS) 1994-1999
11 countries
US\$ 8 million
- ▶ Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) 1999-2008
12 countries
US\$ 16.2 million
- ▶ Implementation of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) 2008-2013
11 countries
US\$ 10.86 million

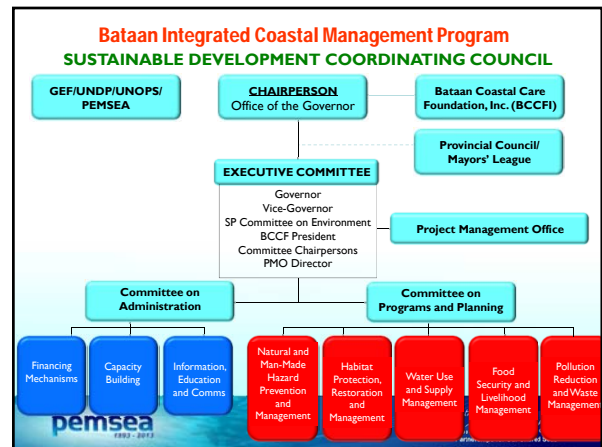
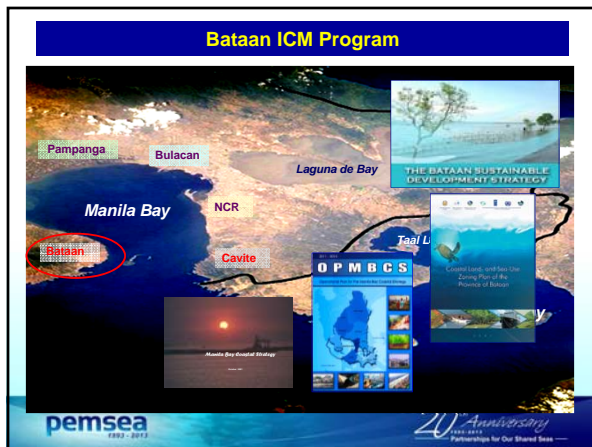
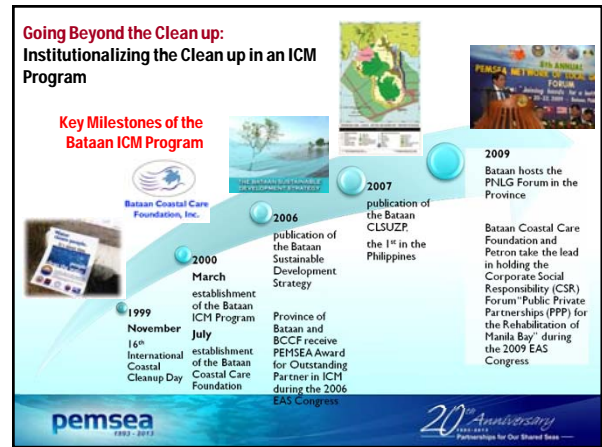
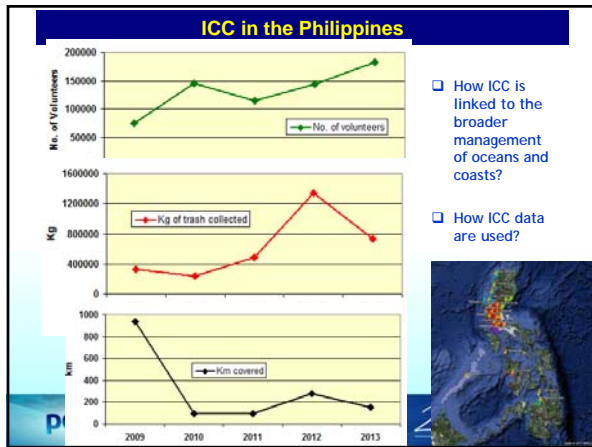
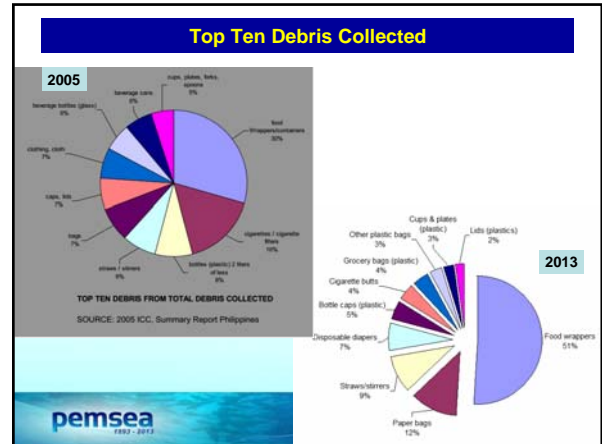


ICC in PEMSEA ICM Sites

PEMSEA ICM Sites Across the Region

List of Participating Provinces				
Province	People	Islands	Est. Vol (kg)	Est. Distance (km)
Aklan	1,000	200.00	1,000.0	1.00
Batangas	143,882	14,174.3	567,320.0	318.6
Camiguin	1,270	1038	17,968.0	7.5
Cavite	1,727	500	6,071.0	4.5
Davao Del Norte	200	0.00	0.0	1.00
Iloilo	2,241	439	9,667.0	1.6
Laguna	51	50.00	200.0	1.00
Leyte	127	68	1,028.0	3.1
Metro Manila	7,782	3634	79,796.0	7.1
Mindoro Oriental	43	30	230.0	1.8
Negros Oriental	2,927	607.5	12,698.9	6.7
Northern Samar	197	0.00	0.0	2.00
Palawan	5,430	407	2,764.0	16.6
Quezon	2,716	0.00	1,800.0	4.00
Sarangani	1,884	87	4,922.0	3.8
Zambales	29,308	421	70,460.0	27.4
Zamboanga Del Sur	51	0.00	1.0	1.00
TOTAL	182,408	150,544	794,182	446



Private Sector Support in the Bataan ICM Program





The BCCFI currently consisting of 18 organizations aims to act as a **catalyst and provide counterpart funding** for the Bataan Integrated Coastal Management Program (BICMP) to build better coastal governance, explore ways for a dynamic & sustainable public-private partnerships in environmental management, increase awareness, and promote community participation in coastal resources management.

- ❑ Leadership and participation in PCC
- ❑ Participation in consultations leading to policy reforms
- ❑ Resource Mobilization
- ❑ Sponsorship of community-based projects
- ❑ Information, Education and Communications campaign




Investments in ICM

Year	Provincial Government	Municipal Government	BCCFI	Other Partners	Total
2005	1,747,243 (\$39,710)		2,112,148 (\$48,003)	1,097,400 (\$24,941)	4,956,791 (\$112,654)
2009	2,080,000 (\$47,273)	120,000 (\$2,727)	2,213,000 (\$50,295)		4,413,000 (\$100,295)
2010	1,500,000 (\$34,091)		776,000 (\$17,636)		2,276,000 (\$51,727)


Recognition and Award



PEMSEA RECOGNITION OF LOCAL GOVERNMENT GOOD PRACTICES IN SUSTAINABLE DEVELOPMENT OF COASTAL AREAS THROUGH INTEGRATED COASTAL MANAGEMENT
is hereby awarded to the
Bataan Provincial Government, Philippines

For its continuing efforts in improved coastal governance including the establishment of an inter-agency multi-sectoral coordinating mechanism, the development of a coastal strategy and implementation of environmental management programs aimed at restoring environmental quality, strengthening the resiliency of coastal communities and natural resources and economic benefits without compromising its social and ecological values.

Given this 1st day of November 2009 at the KAS Congress 2009, Manila, Philippines



- Recognition of local governments that have made contributions to the advancement of sustainable coastal development through ICM implementation
- Implementation of good practices in:
 - Planning and development of ICM programs
 - Reduction in environmental stress through ICM implementation
 - Sustainable development of coastal resources and communities through ICM




Coastal Clean up in Bataan

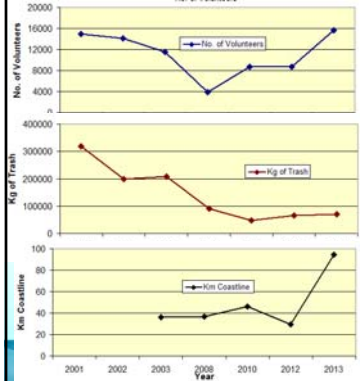
- ❑ Annually since 1999
- ❑ Part of the annual ICM work program since 2005
- ❑ Problems addressed by the clean up activity
 - ❑ Engagement and participation of community
 - ❑ Proliferation of garbage and other marine debris in the coastal area of Bataan due to increasing population
 - ❑ Environmental management awareness among stakeholders
 - ❑ Need to improve management and control of coastal resources use
- ❑ Post evaluation and assessment being conducted
- ❑ Results being reported to Mayors, Municipal Planning Officers and barangays (villages)






“PICK IT UP, CLEAN IT UP, FOR TRASH FREE SEAS”




Coastal Clean up in Bataan





- **Success factors**
 - Venue for interactions among different stakeholders
 - Increased awareness and participation
 - Strengthened partnership of different sectors




Coastal Clean up in Cavite

- ❑ Annually since 2006
- ❑ Post-evaluation and assessment conducted after every clean up
- ❑ Coastal clean up data used as basis for policy and decision making
 - ❖ Clean up data (2006) – revealed huge amount of hospital wastes. Attention of the hospitals were called through letters transmitted indicating clean up results
 - ❖ Clean up data (2006-2010) – basis for enacting Provincial Ordinance No. 007-2013 banning the use of plastic bags in Cavite
 - ❖ Linking to disaster management (flooding) through recommendation of areas to be dredged based on clean up data
 - ❖ Municipal LGUs initiated solid waste management programs (e.g., waste traps, MRFs)
- ❑ Next steps
 - ❖ ICC scheduled on 20 Sept 2014
 - ❖ ICM program to partner with DILG and the villages to address informal settlers


Coastal Clean up in Batangas

- Annually since 2003
- Being coordinated by the private sector and municipal LGUs since 2006
- ICC data being compiled by BCRMF
- Aimed mainly for public awareness and stakeholder mobilization
- Municipal LGUs have various initiatives for solid waste management







Pollution and waste management	
030	Management plans
031	Water quality
032	Air quality
033	Sanitation and domestic sewerage
034	Municipal solid waste
035	Industrial, agricultural and hazardous wastes

pemsea
1992 - 2012

Coastal Clean up in Guimaras

- Annually from 1996 to 2005 at the provincial level
- Part of the regular public awareness activity of the municipal LGUs

Pollution and waste management	
030	Management plans
031	Water quality
032	Air quality
033	Sanitation and domestic sewerage
034	Municipal solid waste
035	Industrial, agricultural and hazardous wastes

pemsea
1992 - 2012

Lessons Learned

- Proper packaging of data and information from the coastal clean up events can serve as a useful input to policies and decisions for improved coastal and marine management, and social and environmental investments
- Linking **marine litter** and coastal clean up activities to ICM programs of local governments, including **SOC reports**, leverages increased awareness and ownership among coastal communities, while at the same time providing decision-makers and the general public with a means of assessing trends and benefits that are occurring in the coastal and marine areas as a consequence of management interventions

pemsea
1992 - 2012

20th Anniversary
Partnerships for Our Shared Seas

Possible Areas for Collaboration

- Effective application of coastal clean up within the broader framework of the ICM program, including tools and strategies that are needed in the process
- Sharing good practices from NOWPAP countries, organizations and institutions and how coastal clean ups are systematically undertaken and documented, which can be transferred to ICM sites
- Sharing of experiences and tools for processing, analysis and use of ICC data/information as input to policy and investment decisions at the local level

pemsea
1992 - 2012

20th Anniversary
Partnerships for Our Shared Seas



EAS Congress 2015

EAST ASIAN SEAS CONGRESS VIETNAM 2015

Global Targets Local Benefits

Setting the Sustainable Development Agenda for the Seas of East Asia beyond 2015

- Session 1: Celebrating a Decade of Partnerships in Sustainable Development of the Seas of East Asia: Synergies and Achievements
- Session 2: Accelerating Actions for Sustainable Development
- Session 3: From Vision to Reality: Aligning the Global Agenda with Local Benefits

pemsea
1992 - 2012

4 should join the EAS Youth Forum 2015

CHARTING THE FUTURE WE WANT

Engaging Young Champions for the Ocean Beyond 2015

Learn

Interact with environmental experts, scientists and policymakers on the pressing issues and much needed solutions for the sustainable management of our seas and coasts. Share experiences with fellow young leaders in the region and environmental actions being undertaken.

Influence

Make a difference by putting forward workable actions and engaging more young people for environmental cooperation. Outline recommendations to national and local governments, nongovernment organizations, universities and private entities for full sustainable development of our seas and coasts.

Enjoy

Fun and exciting YF4 activities await you. Experience Vietnam's unique culture, charm and hospitality.

Network

Build friendships with fellow young leaders in the region and establish links between experts, scientists and policymakers in environmental conservation and management.



International Cooperation— Opportunity in ICC Network

JEAN (The General Incorporated Association Japan Environmental Action Network)
Tokyo, Japan
Website <www.jean.jp>
Email <cleanup@jean.jp>

International Coastal Cleanup (ICC) Coordinators

- JEAN's participation in ICC since 1990
 - Coordinators network through Ocean Conservancy
- ICC International Report
 - Who's participating?
 - Who's active?
 - Characteristics of each group/organization?
- ICC Coordinator Conference
 - Face-to-face interaction – trustworthy relationships
- JEAN's effort to develop stronger connections with coordinators
 - Introduced coordinators activity reports in our newsletter and annual report
 - Attending and inviting neighboring coordinators to our/their symposiums, etc.

3.11 Earthquake and Tsunami in 2011

- After the disaster, the issue of outflowing materials to the sea emerged.
- Given the ocean currents and winds, increasing concern arose around efforts to approximate the drifting ashore of those materials along the west coast of North America and other coastal regions.

International Concerns

- At present, no international regulations exist requiring Japan to collect marine driftage from 3.11 disaster.
- Even so, there was world-wide interest and help for the damage.
- However, in Japan, many people worried the floating driftage from their shores would end up in other countries.

Network through ICC

- JEAN has continued its action against marine litter since 1990. As Japan's ICC, JEAN is in the ICC network.
- JEAN conducted field investigations along the West Coast of North America and in Hawaii. At the request of the Ministry of Environment of Japan, JEAN shared its findings with other concerned entities, such as NGOs.

Meetings to Respond to the Tsunami Driftage Caused by the Great East Japan Earthquake

- August 2012, the first meeting was in Portland, Oregon
 - Contract project of Ministry of Environment, Japan
- With the help of Ocean Conservancy, ICC coordinators from the US West Coast and Hawaii were invited (beach inspection and opinion exchange)



Investigation, Meetings and Forums

- January 2013, beach investigation in Hawaii (islands of Oahu, Hawaii and Maui) and a meeting to exchange opinions

Funded by Environmental Restoration and Conservation Agency



Investigation, Meetings and Forums

- February 2013, participation in a cleanup activity and exchanging opinions with local citizens in Lincoln City, Oregon

Funded by Environmental Restoration and Conservation Agency



Investigation, Meetings and Symposiums

- March 2013: debrief meetings in Tokyo and Sendai City, Miyagi, inviting ICC related people

Funded by Environmental Restoration and Conservation Agency

- June 2013: Beach inspections and opinion exchange in Alaska, US (Funded by Sasakawa Peace Foundation, and partially own funds used)

- October 2013: In British Columbia State, Canada – Inspection of beaches, participation in beach cleanup and opinion exchange; also in the State of Washington, (US), beach inspections and interviews were held with local NGOs

Contract project of Ministry of Environment, Japan

- As the roundup, symposiums in Canada (in October) and Sendai (in November) will be held in 2014

Contract project of Ministry of Environment, Japan



Field investigation on the coasts of Montague Island, Alaska, USA



Left & right: Pacific Rim National park reserve, British Columbia, Canada
Center: La Push, WA, USA



Montague Island, Alaska, USA



Shipping trash collected from Montague Island to Whittier, Alaska, USA



Common Understanding resulting from the exchange of opinions among the parties of Japan and North America

- Although large amounts of floating and washed ashore materials from the tsunami of the the Great East Japan Earthquake are disturbing matter, the problems of marine litter existed long before and are more serious and larger in scale.
- Combined with the problem of disaster-originated floating materials — and the public interest generated by the 2011 tsunami — public awareness programs should emphasize the issue of marine litter in general.

Common Understanding

- Another such disaster could – and likely will – occur in future. The possibilities of earthquake and tsunami of that scale is not limited to Japan. Therefore, sharing information and situations on “disaster prevention”, “reduction of the effects of a natural disaster” and “recovery from the disaster” are worthwhile and productive through the network of ICC.

Extended wider circle and mutual understanding of people connected by ICC

- An advantage of ICC network: participating in it from respective countries and regions to address the problems of marine litter and share the results.
- The network is moderate, but there is a feeling of fellowship – put effort in the same action that connects us globally because the oceans are all connected as one.
- The feeling of fellowship leads to an expeditious collaboration and cooperative framework building, even if it is limited by the opportunity to meet directly.

Extended wider circle and mutual understanding of people connected by ICC

- Here are some take-away points from the problems of driftage that originated from the Great East Japan Earthquake:
 - Brought opportunity to meet ICC coordinators of North America and members from Ocean Conservancy directory.
 - Face-to-face opinion exchange and discussion increased our mutual trust.
 - Chances could only limited to meet in person, being “fellow member of ICC” would link to an expeditious action and a collaborative framework building.

Strengthening of Coordination among ICC Coordinators

- Case of OSEAN and JEAN
 - Over ten years of exchange between the two organizations led to strengthening of coordination
 - Both organizations put great effort into meeting directly
 - Marine litter related programs, symposiums, workshops, etc.
 - Holding voluntary research seminar (via Skype)
- Also with other Asian ICC coordinators
 - Information gathering and sharing
 - Connecting to local and national government offices
 - Connecting to other specialists – widening the link

“Marine Litter News”

a Web Newsletter
published by East Asia Civil Forum on Marine Litter

- East Asia Civil Forum on Marine Litter established in October 2009, at the Marine Litter Summit in Shimonoseki, Japan
- Composed of NGOs from Japan, South Korea, Thailand and Taiwan: OSEAN, JEAN, TOCA and GREEN FINS Thailand
- Welcomes more participation from other NGOs from East Asian countries
- “Marine Litter News” published biannually
- For the issue of May 2014, Vol. 5(1), the newsletter invited articles from the world
- China (Shanghai Rendu Ocean NPO Development Center) and South Africa (Plastics South Africa) posted articles this time
- Forum could provide a venue for all of us to share our vision, experiences and creative actions



2014 NOWPAP ICC Workshop, Boryeong, Korea

NGO activities based on international cooperation to solve marine debris problem in Asian region

Sunwook Hong (Ph.D, ICC country coordinator)
Jongmyoung Lee (Ph.D), Yong Chang Jang (Ph.D), Su Yeon Hong (Ph.D)
Jong Su Lee, Mi Jeong Lee

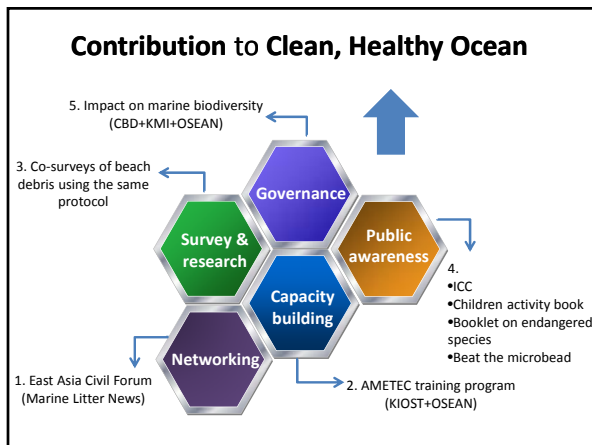


Background & Purpose

- Asian region - Potential hot spot of marine debris pollution in the globe
- Key persons in NGO sector - ICC coordinators
- Rare opportunities for capacity building
- Limited support for networking and cooperation

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- To share and learn experiences and information on MD
- To build capacity and to encourage for active and continued involvement
- To find common and effective strategies to address MD
- To achieve the goals for clean and healthy ocean in the region





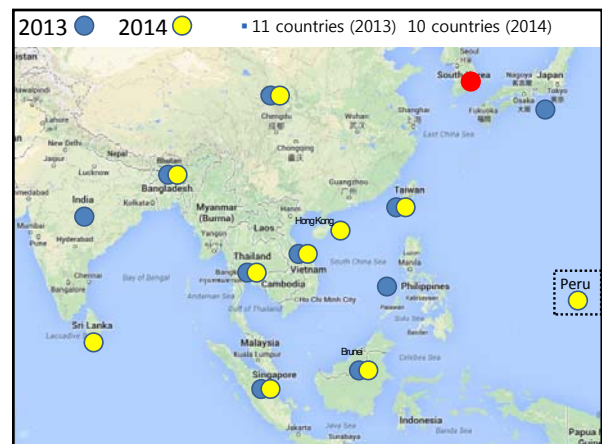
1. East Asia Civil Forum (since 2010)

- ❖ Purpose
 - To strengthen networking of ICC coordinators in the region
 - To encourage NGOs
 - To co-learn and spread best practices
 - To raise public awareness on NGO activities
- ❖ Actions
 - Enlarging memberships (From 4 in 2011 to 8 partners now)
 - Issuing Marine Litter News biannually
 - Inviting contributors beyond the Asian region




2. AMETEC 2013~2015: Marine Debris

- ❖ Purpose
 - To build capacity of ICC coordinators in the region
 - To build networks among scientists and NGOs
- ❖ Program
 - Three-year training program organized by KIOST and OSEAN
 - Theme: Macro-Meso-Micro debris


2. AMETEC 2013: Macro debris

- ❖ **Programs**
 - Sharing NGO level activities and national policies of home countries
 - Developing and applying a harmonized protocol to survey macro debris
 - Developing public awareness programs




2. AMETEC 2014: Meso-Micro debris

- ❖ **Program**
 - Sharing the beach macro debris survey results
 - Sampling and analysing meso-micro debris from home countries
 - Learning international trend and recent research results on microplastics (participating in GESAMP symposium)



3. Co-surveys on beach debris using the same protocol

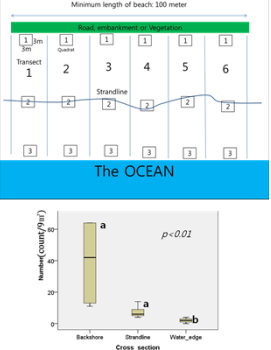
- ❖ **Purpose**
 - To assess beach debris pollution level in Asian region
 - To develop proper strategies to solve marine debris problem
- ❖ **Actions**
 - Reviewing and practicing a protocol modified from UNEP/IOC guideline
 - Co-surveys using the same protocol. (Oct. 2013; June & Oct. 2014)



3. Co-surveys on beach debris using the same protocol


- ❖ **Actions**
 - Analyzing the survey results and testing a proper methodology
 - Sharing the results of this pilot study through PICES conference (Oct 2014) and a report (Feb 2015)

- Fragments included
- 18 quadrats on one beach
- Attachment of organism




4-1. Publication of an activity book for children

- ❖ **Purpose**
 - To educate and raise awareness of children
- ❖ **Actions**
 - Publishing a children activity book about marine debris impact on wildlife (Korean, English)
 - Distributing to schools and NGOs
 - Translated into Chinese (by Taiwanese NGO)



4-2. Publication of a booklet on endangered species

- ❖ **Purpose**
 - To raise awareness of anglers
 - To stop more damage through proper management
- ❖ **Actions**
 - Publishing a booklet on an endangered species threatened by MD (Korean, English)
 - Making video on the species (Korean, English)
 - Translated into Chinese (by Chinese NGO)



4-3 Beat the Micro Bead

- ❖ **Purpose**
 - To beat the microbead added in personal care products
 - To make manufacturers change
 - To raise awareness on microplastics in the ocean
- ❖ **Actions**
 - Participating the global action
 - Building DB on products in Korea and sharing with global partners
 - Translating smart phone APP
 - Launching in Jan 2015



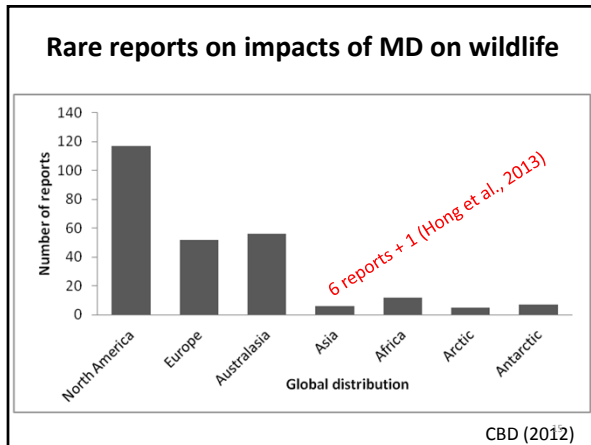

5. CBD COP 12 Side event on marine debris

6-17 Oct. 2014, Pyeongchang, Korea



After a winter and 17 months of being lost, Park Jeongmin, the 18-year-old bear, is being reunited with his family.

The Twelfth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 12)
6-17 October 2014 | Pyeongchang, Republic of Korea



5. CBD COP 12 Side event on marine debris

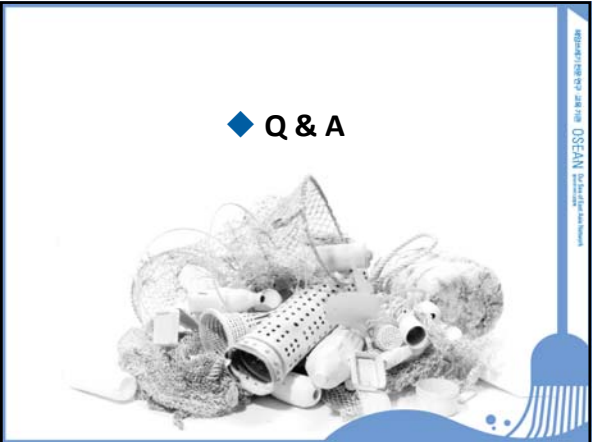
- ❖ **Purpose**
 - To review and consolidate on the experiences, tools and guidance on addressing the impacts of MD on marine and coastal biodiversity
 - To provide inputs to the forthcoming CBD Expert Workshop (Dec 2014)
- ❖ **Actions**
 - Oct. 10, 2014, Pyeong Chang, S Korea
 - Organizing with CBD secretariat and KMI




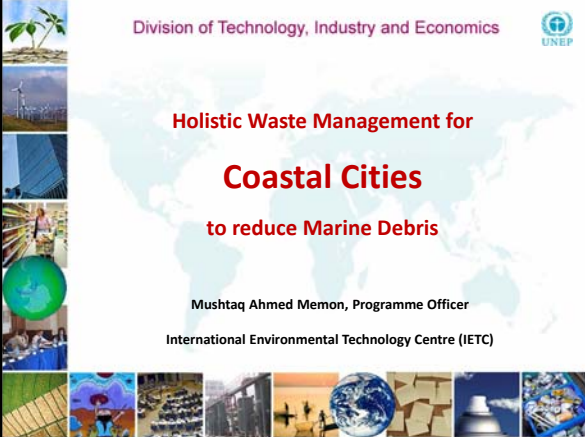

Concluding remarks

1. Recent NGOs' involvement to address MD and capacity building in Asian region has been successful.
2. However, there are lots of limitation to make a difference for better ocean in terms of funding, man power, and cooperation in local, national, and international levels.
3. It is time to step forward on the basis of strong partnerships among NGOs, governments, research organizations, semi-governmental organizations, and international bodies.





Division of Technology, Industry and Economics 



Holistic Waste Management for Coastal Cities


to reduce Marine Debris

Mushtaq Ahmed Memon, Programme Officer
International Environmental Technology Centre (IETC)



Holistic Waste Management

To address waste in all its forms through an integrated system


Need for HWM for Cities

- Cities are facing an increasing growth in population, and shares in GDP growth, resulting in – among other things – increasing quantities of waste, with complex composition, being generated in various forms (solid, liquid and gaseous).
- Industrialization and economic growth has produced more amounts of waste, including hazardous and toxic wastes.
- There is a growing realization of the negative impacts that wastes have had on the environment and health.
- Complexity, costs and coordination of waste management has necessitated multi-stakeholder involvement in every stage of the waste stream. This calls for an integrated approach to waste management.
- Local Governments are now looking at waste as a *business opportunity*, (a) to extract valuable resources contained within it that can still be used and (b) to safely process and dispose wastes with a minimum impact on the environment .



Coastal Cities & Waste

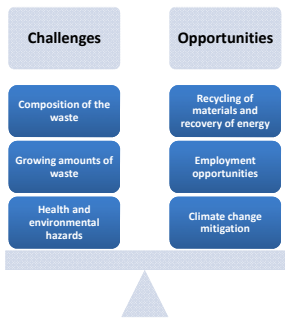
- **Coastal cities** are low-lying cities that tend to share similar [sustainable development](#) challenges. These cities are turning into major economic and tourism hubs for the countries and this rapid growth is not aligned with environmental protection.
- Many national and local governments now recognise the need to move towards low-carbon, climate resilient cities and to link development with environment and health, biodiversity, resource efficiency, circular economy, etc.
- Tourism is one of the important economic sectors and it has contributed much to the development of many coastal cities. However, if not properly planned and managed, tourism could significantly degrade the environment, especially marine environment, on which it is so dependent – creating a vicious circle.



Vicious Circle to Virtuous Circle

Challenges and opportunities

Challenges	Opportunities
Composition of the waste	Recycling of materials and recovery of energy
Growing amounts of waste	Employment opportunities
Health and environmental hazards	Climate change mitigation




Tourism and Waste


- Tourism in coastal is contributing to enormous amount of waste and wastewater
- Major waste streams from tourist industry include waste and wastewater from cruise ship and hotels, packaging wastes
- Waste from hotels, especially food waste and packaging waste from imported food and drinks, and construction waste and e-waste (renovation of hotels)
- Marine-based waste such as fishing gears and oil is generated from the boats
- In some of the cases disaster waste is also another waste stream especially during typhoon season
- Food waste and wastewater are biggest in terms of volumes

Impacts

- This waste contaminates soil, water (surface water, underground water and seawater), and air (methane from decomposition of waste, black carbon CO2 and other pollutants from open burning and from waste collection trucks)
- This waste also creates bad smell and provide breeding ground for insects and rats - turning beaches, sea, and islands dirty and unhealthy affecting tourism.
- There are also serious impacts on human health and environment from toxic wastes including e-waste and POPs

HWM for coastal cities

- Sea based sources for waste in coastal cities (e.g. shipping and floating debris)
- Land based sources of marine litter (waste and wastewater)
- HWM to also include the facilities for treatment, recycling and disposal of marine litter, and waste and wastewater from ships



Important Considerations

- Wastewater reuse through source segregation (black water and grey water)
- Extended producer responsibility for take back of waste including packaging waste and cruise ship waste – also prevention of food waste by introducing polluter pay principle
- Decentralized waste and wastewater treatment focusing on cruise ships and hotels
- National and/or regional waste recycling facilities based on economies of scale – also turning waste as a resource (material and energy) solutions to reduce final waste volumes
- National framework for hazardous waste management
- Promoting eco-tourism to encourage facility and ship operators to reduce waste and reuse and recycle most the waste – also promote (dis)incentive measures for tourists to reduce waste

International Environmental Technology Centre (IETC) - 国際環境技術センター

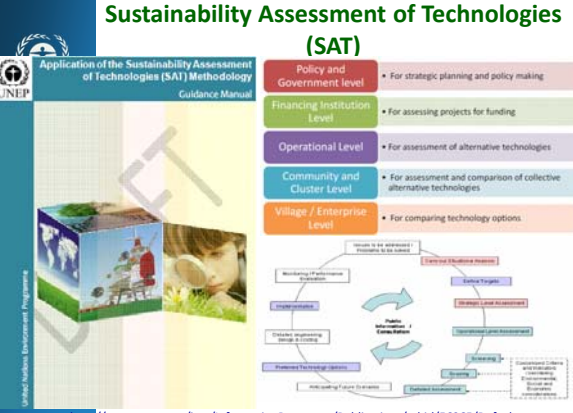
- The International Environmental Technology Centre (IETC) is a branch of the Division of Technology, Industry, and Economics (DTIE) and is leading the waste management portfolio within UNEP.
- UNEP IETC focuses on identifying and showcasing environmentally sound technologies (ESTs) and management practices, primarily in relation to waste.



UNEP IETC is located in Osaka, Japan.

Sustainability Assessment of Technologies (SAT)

Application of the Sustainability Assessment of Technologies (SAT) Methodology Guidance Manual



<http://www.unep.org/ietc/InformationResources/Publications/tabid/56265/Default.aspx>

Demonstration & Pilot Projects

Integrated Solid Waste Management

- Wuxi New District, China – 2008
- Pune City, India – 2008
- Maseru City, Lesotho – 2009
- Matale City, Sri Lanka – 2009
- Novo Hamburgo, Brazil – 2009
- Nairobi – 2010
- Bahir Dar, Ethiopia – 2010
- Pathum Thani, Thailand – 2011
- Addis Ababa – 2011
- Danang, Vietnam - 2012
- Kampot, Cambodia - 2012
- Bangkok – 2012 Honduras – 2013
- Penang (Malaysia) and Ho Chi Minh (Vietnam) – 2014-15



Waste Agricultural Biomass, Waste Plastics & E-waste

- Sri Lanka, Nepal, Pakistan & Malaysia – 2010-11
- India, Cambodia and Costa Rica – 2012-13
- Wastewater reuse, rainwater harvesting and organic waste recycling in sugar industry in Vietnam - 2007


















Capacity Building and Expert Meetings for Technology Support

- Regional and national training on Identification of Technologies (SAT)
- Expert meetings to identify barriers and solutions
- Training Resource Pack (TRP) for hazardous waste with ISWA & UNIDO
- Climate and Clean Air Coalition (CCAC) with various partners



Proposed Joint NOWPAP-IETC Activities

- To assist on HWM for coastal cities - National and city level waste management strategies based on life cycle analysis by preparing baseline reports on waste – identification of gaps in current waste management system
- Environmentally sound management (ESM) plan incorporating appropriate policies and environmentally sound technologies (ESTs) in line with the targets and stakeholders' concerns
- To develop joint projects for coastal cities with partners including Northwest Pacific Action Plan (NOWPAP) of UNEP



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Partnership,
Partnership and
Partnership
Thank You...

