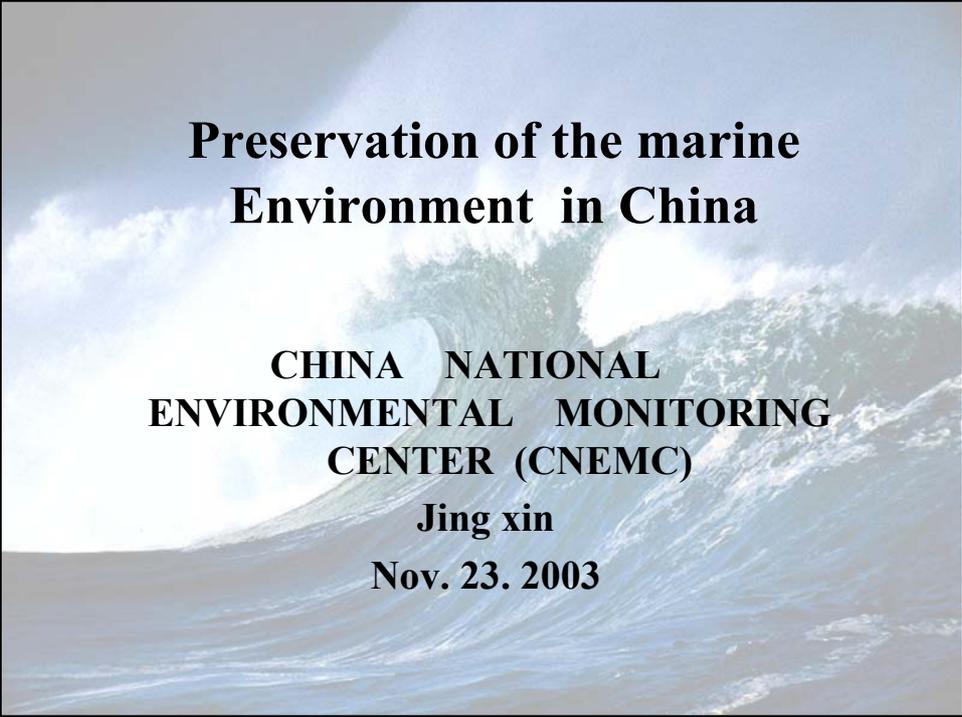


Session1

Preservation of Marine Environment



Preservation of the marine Environment in China

**CHINA NATIONAL
ENVIRONMENTAL MONITORING
CENTER (CNEMC)**

Jing xin

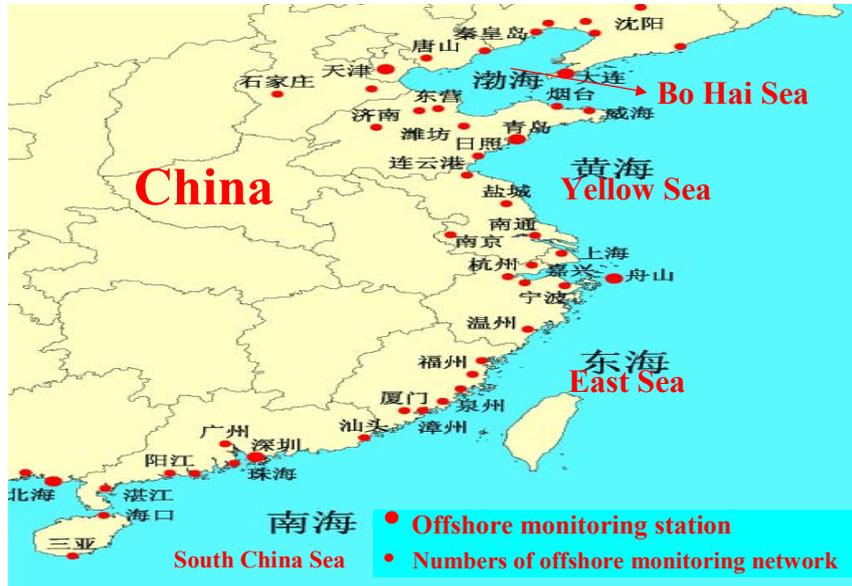
Nov. 23. 2003



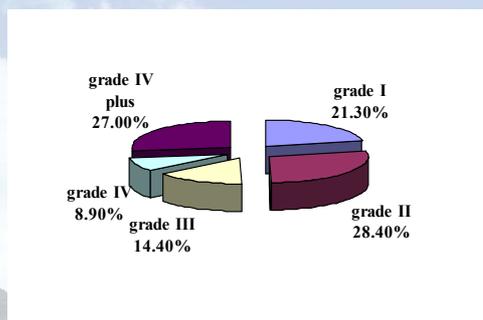
Content

- 1. Offshore monitoring network**
- 2. Sea water quality monitoring**
- 3. The bathing place water quality monitoring**
- 4. Red Tide (HAB) monitoring**
- 5. Preservation of the marine Environmental work**
- 6. Preservation of the marine Environmental law
and regulations**
- 7. International cooperation**

1. Offshore monitoring network



Sea Water quality overview in offshore area



Grade	Percent%
grade I :	21.3%
grade II :	28.4%
grade III :	14.4%
grade IV :	8.9%
grade IV plus:	27.0%

Fig. Water quality in offshore area in 2002

Comparison of Sea water Quality from 1994 to 2002

There were 2896 sea water quality monitored sites for offshore, the results as: the sea water of Grade II and grade IV in most monitored sites. More than 50% present of total is grade I and II in 2000 and 2002, the sea water quality has been improved.

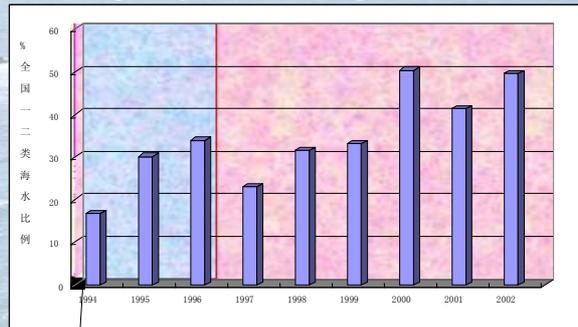
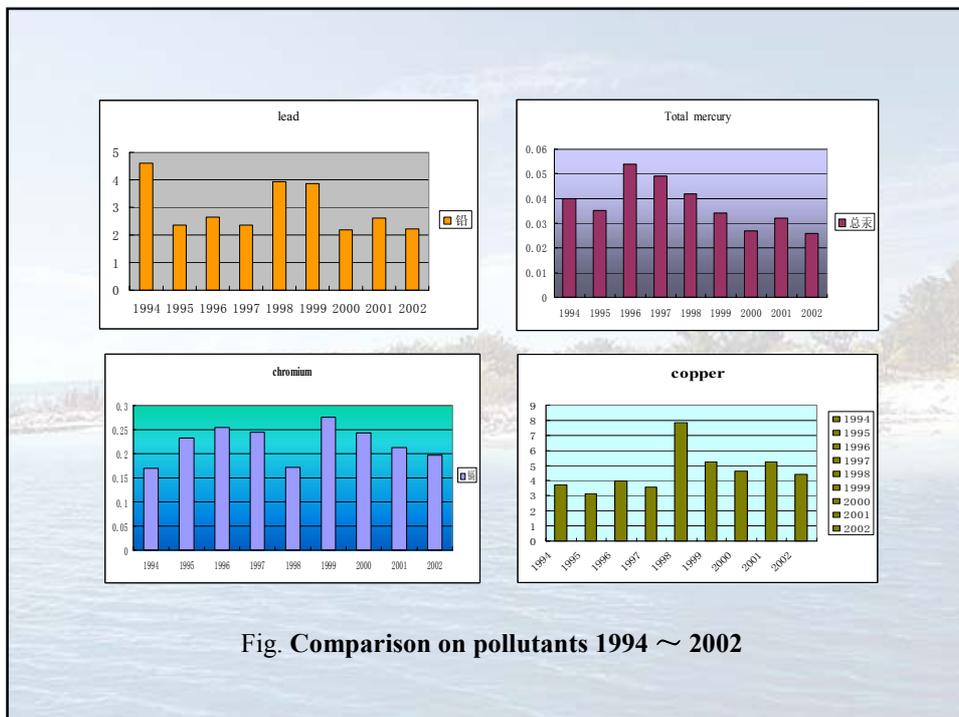
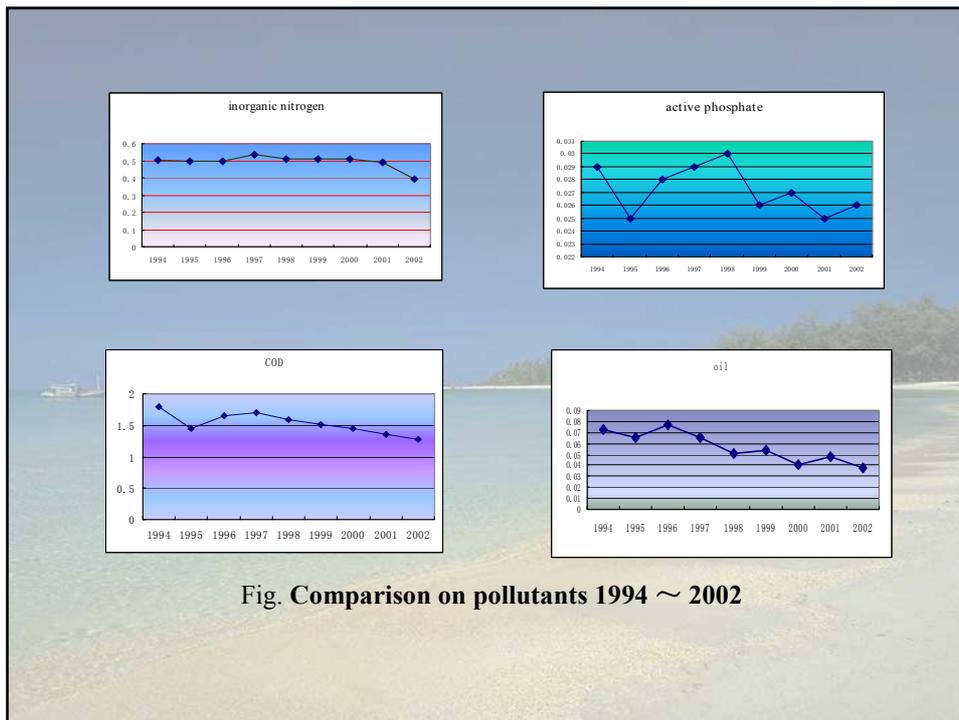


Fig. Comparison of Percentage of grade I and II in Chinese offshore

The main pollutants

Main affecting pollution indicators where more failure is detected are inorganic nitrogen and active phosphate. Failures in indicators as oil, COD and lead are detected in some parts of the sea area. Some individual cases also detected that are resulted from heavy metals like copper, mercury and cadmium.

During 1994 to 2002, comparison the different pollutants, the results as: the consistency of inorganic nitrogen, COD, oil and active phosphate has been decreased.



3. The bathing place water quality monitoring

From 29, June, 2002, 19 bathing place in ten cities has been monitored, the results shows: in 240 times monitoring, 50.8% of bathing places is grade I , 37.1% of bathing places is grade II ,10.8% of bathing places is grade III, 1.3% of bathing places is grade IV.

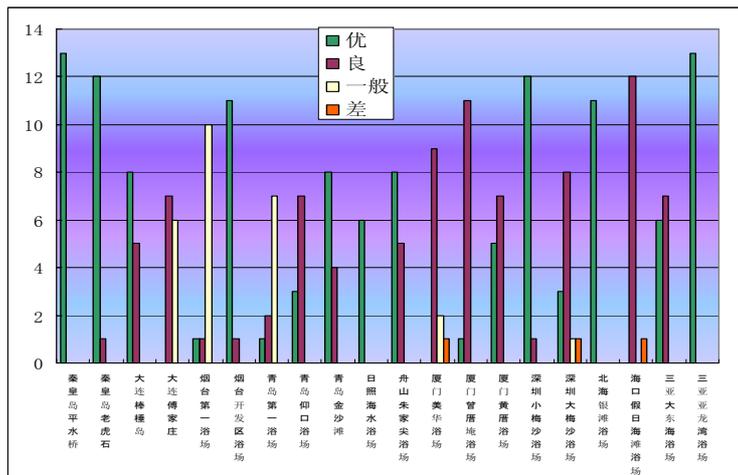
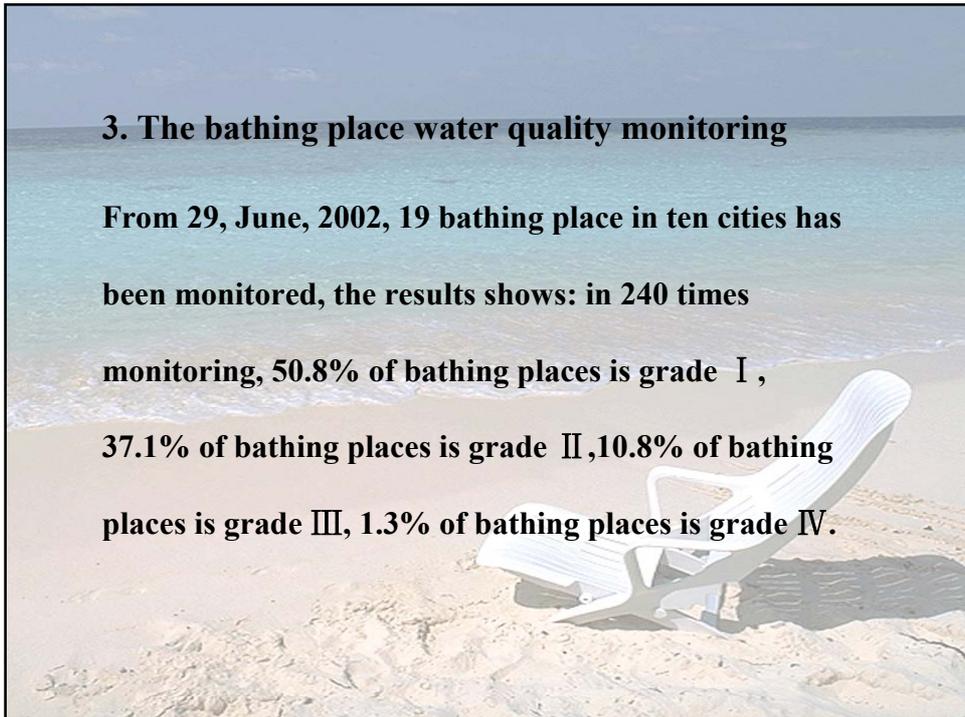


Fig. The bathing place water quality in coastal cities

4. Red Tide (HAB) monitoring

The results of monitoring shows:

In 2000, 28 times red tide was occurred in Chinese offshore, what an increase 13 time occurred in comparison with 1999.

In 2001, the red tide was occurred in Chinese sea is 77 times, economic lost 10 hundred million, area is 1.5 ten thousand Km², 49 times increased than 2000.

➤ The frequency of red tide increased

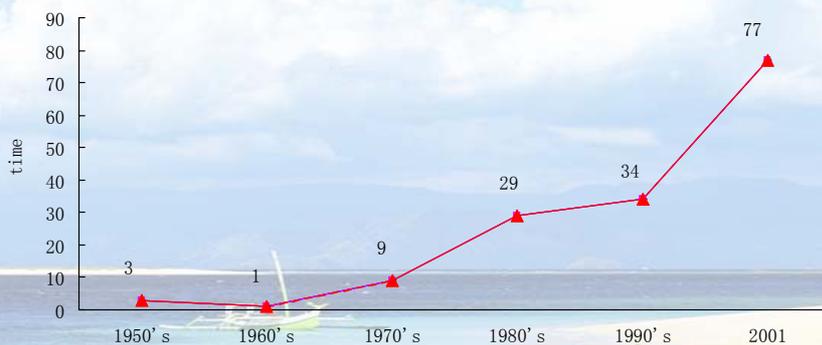


Fig. The red tide was occurred in Chinese sea water

4.1 The main reasons of red tide occurred

● **Sources of sea water pollution:**

Industrial waste water discharged into the sea

Municipal waste water discharged into the sea

Non-point sources

cultivation by sea water

● **Climate**



➤ The sea water quality increased and the ecological degradation of offshore

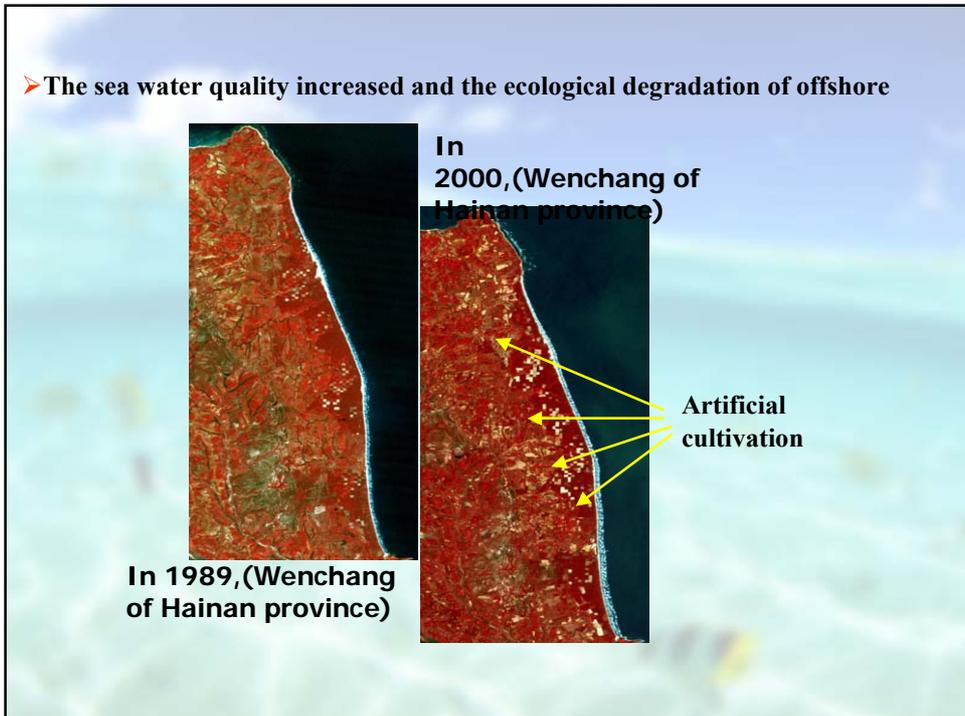


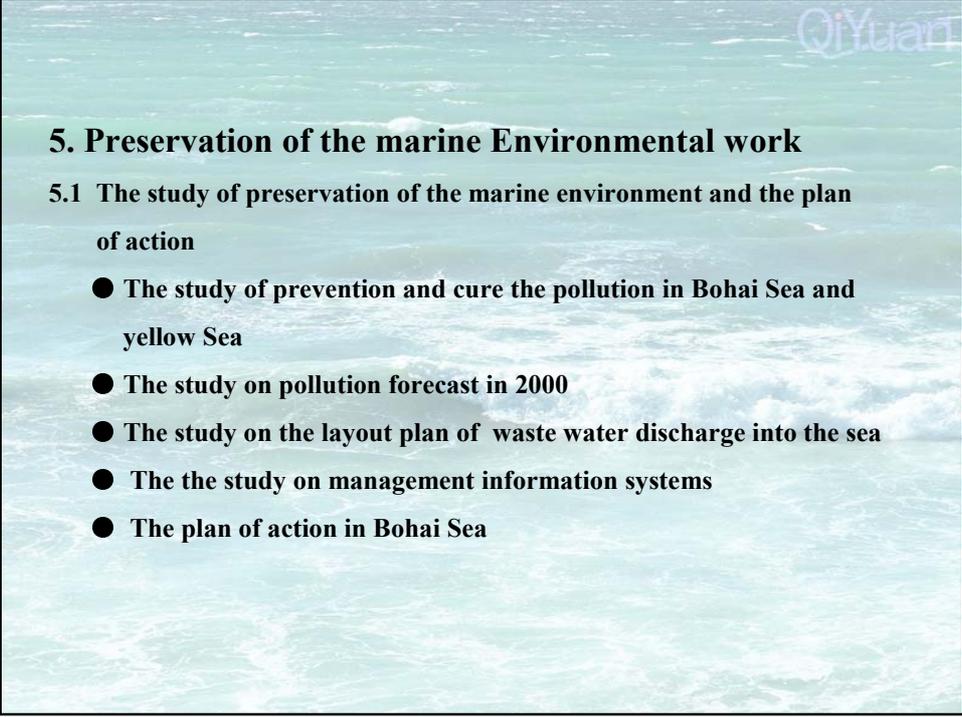
In 1989,(Wenchang of Hainan province)



In 2000,(Wenchang of Hainan province)

Artificial cultivation





5. Preservation of the marine Environmental work

5.1 The study of preservation of the marine environment and the plan of action

- The study of prevention and cure the pollution in Bohai Sea and yellow Sea
- The study on pollution forecast in 2000
- The study on the layout plan of waste water discharge into the sea
- The the study on management information systems
- The plan of action in Bohai Sea



6. Preservation of the marine Environmental law and regulations

6.1 Law

- The Law for Prevention of the marine Environment
- The managerial ordinance for depollution from land
- The managerial ordinance for depollution of coastal engineering
- The managerial ordinance for depollution of dismantle shipping

6.2 Standard

- The Standard of Sea water Quality
- The Standard of fish culture water Quality
- The Standard of Waste Water Discharge
- The Standard of pollutants discharged by shipping
- The Standard of Waste Water Discharge by petroleum industry

7. International cooperation

State Environmental Protection Administration has cooperated with more than 20 countries. China EPA has cooperated with UNEP. We would like study the advanced technology with the other countries and change for information.



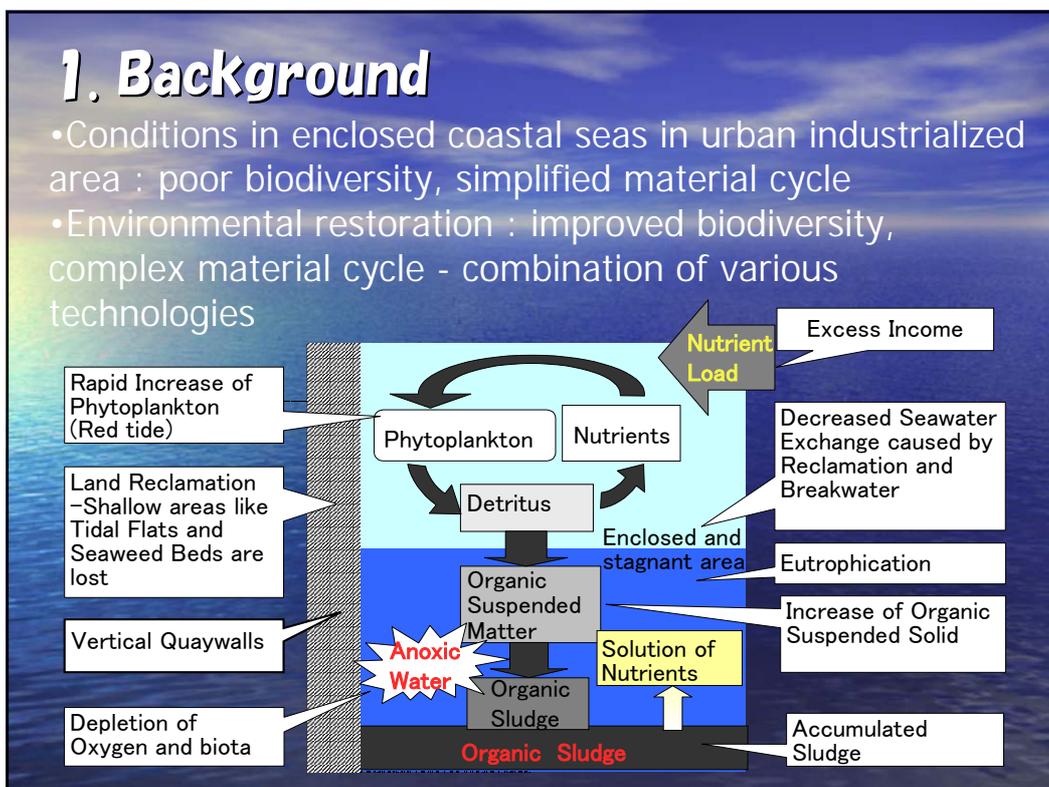
**Project aimed at packaging
Optimal environmental
restoration
technologies**




An overview



International EMECS Center



2. Background (continued)



Surrounded by vertical quaywall and reclaimed land



Sea bottom in Port of Amagasaki
4-5 m underwater, September 2002
oxygen-poor condition

3. Background (continued)

- Port of Amagasaki : one of the worst in environmental condition – model case
- Amagasaki Nijuisseiki-no-mori (the Amagasaki century 21st Forest Project):
On-going project by the prefectural government for environmental restoration in the land area around Port of Amagasaki

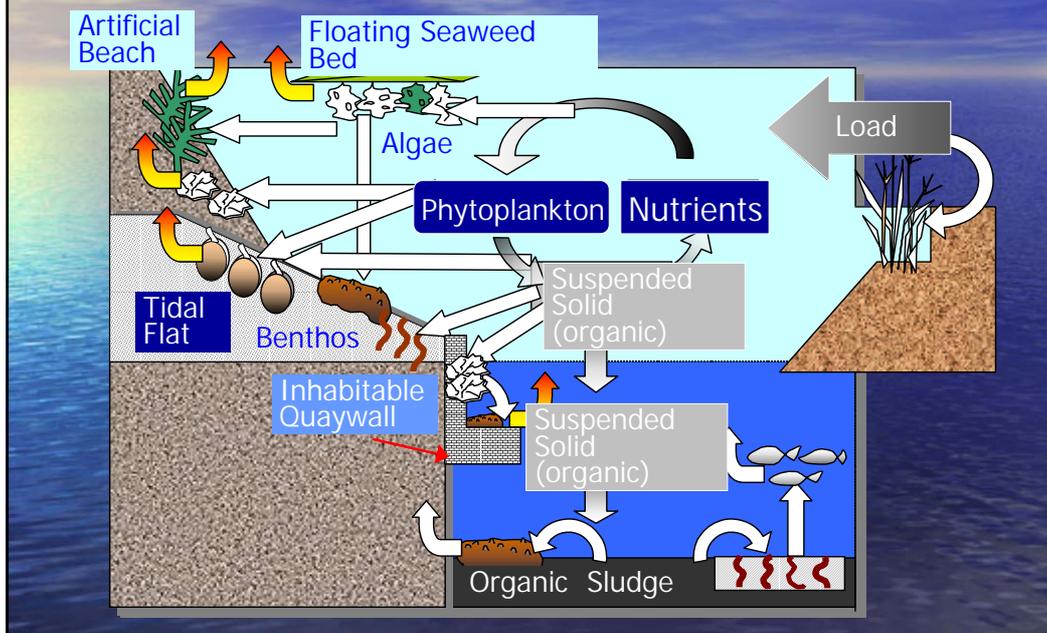


4. Objectives

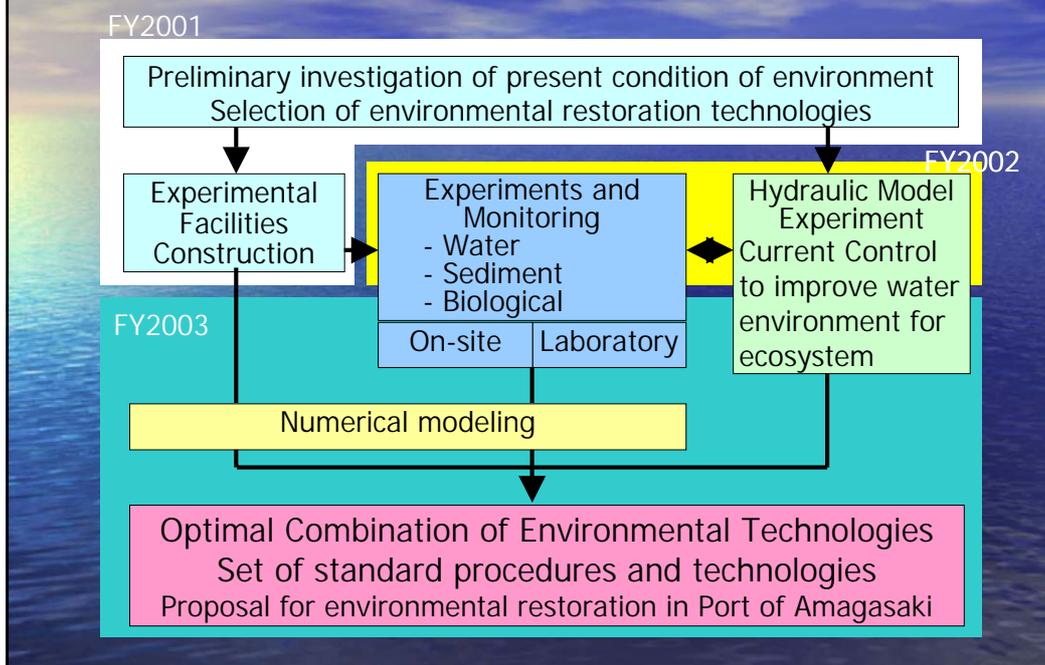
1. Optimal combination of environmental restoration technologies : **the best mix**
2. Proposal for environmental restoration in sea area of Port of Amagasaki
3. Set of standard procedure and technologies for planning of environmental restoration for future application in other sea areas : **"packaging"** environmental restoration technologies

5. Expected Effect

(Formation of Desirable Material Cycle)



6. Flow diagram of the project



7. Experiments - chosen technologies

- 1. Artificial tidal flat (open-type)** : water purification by benthic ecosystem including bivalves (Short-neck clam), nutrients fixation by reed, maintenance of artificial tidal flat
- 2. Closed-type artificial tidal flat** : water purification by pores bed contact and sessile organism, comparison in ecosystem and biomass of sessile algae, seaweed and benthos with those at open-type artificial tidal flat
- 3. Inhabitable quaywall** : improvement of material cycle on vertical quaywall and elimination of organic suspended material to sea bottom by sessile organisms and benthos
- 4. Floating seaweed bed** : fixation of nutrients by algae, formation of seaweed beds in area with poor transparency

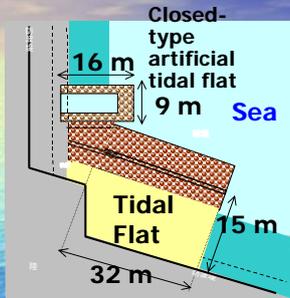
8. Experiments (continued)

5. **Hydraulic control (hydraulic model experiment)** : design of current control in the Bay, improvement of sea water exchange
6. **Seaweed biomass utilization (gasification)** : effective utilization of seaweed produced by creating shallow water area

9. On-site Experiments in Amagasaki Port - Location



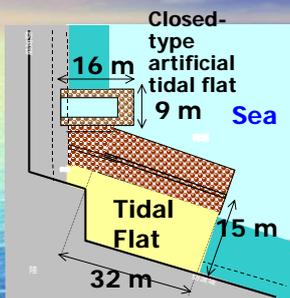
10. On-site Experiments in Amagasaki Port - Artificial tidal flat



Bivalves raising test (Short-neck clam)



11. On-site Experiments in Amagasaki Port - Closed-type artificial tidal flat



Cobble cages

12. On-site Experiments in Amagasaki Port - Floating seaweed bed (rafts)



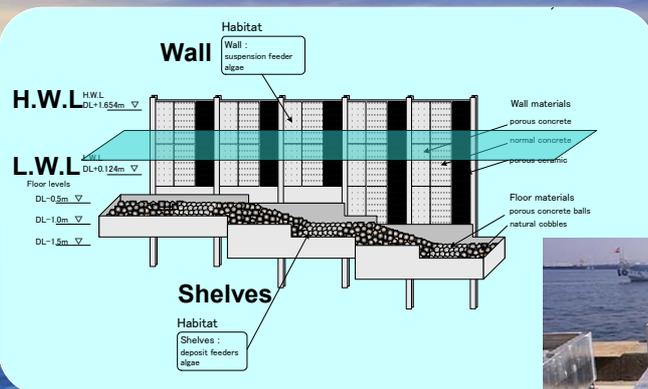
Planting Wakame seaweed (Undaria pinnatifida)



Grown-up Wakame seaweed

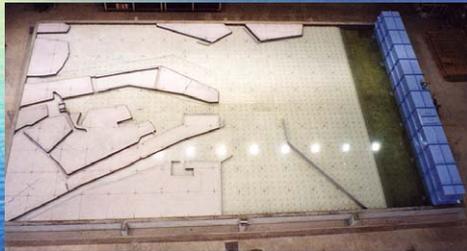


13. On-site Experiments in Amagasaki Port - Inhabitable quaywall

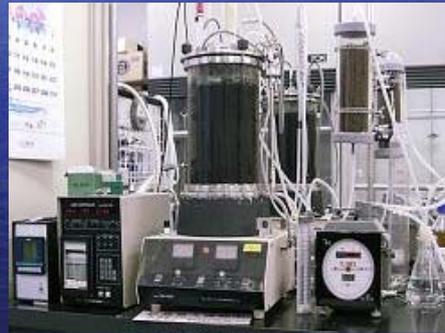


Shelf
Porous concrete balls
Natural cobbles

14. Hydraulic control and seaweed biomass utilization



Hydraulic control
(hydraulic model experiment)
Size : 18m × 10m
Scale : 1/500 horizontal,
1/63 vertical



Seaweed biomass utilization
(anaerobic digestion to produce
methane gas)

15. Examples of organisms found at experimental facilities

Artificial Tidal Flat



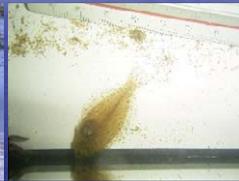
clams



lugworm



goby



Juvenile of flounder

Closed-type artificial tidal flat



Algae covering cobble



sea anemone

16. Examples of organisms found at experimental facilities (continued)

Floating Seaweed Bed



Sessile organisms on seaweed



Juvenile fish

Inhabitable Quaywall



Mussels



Crabs

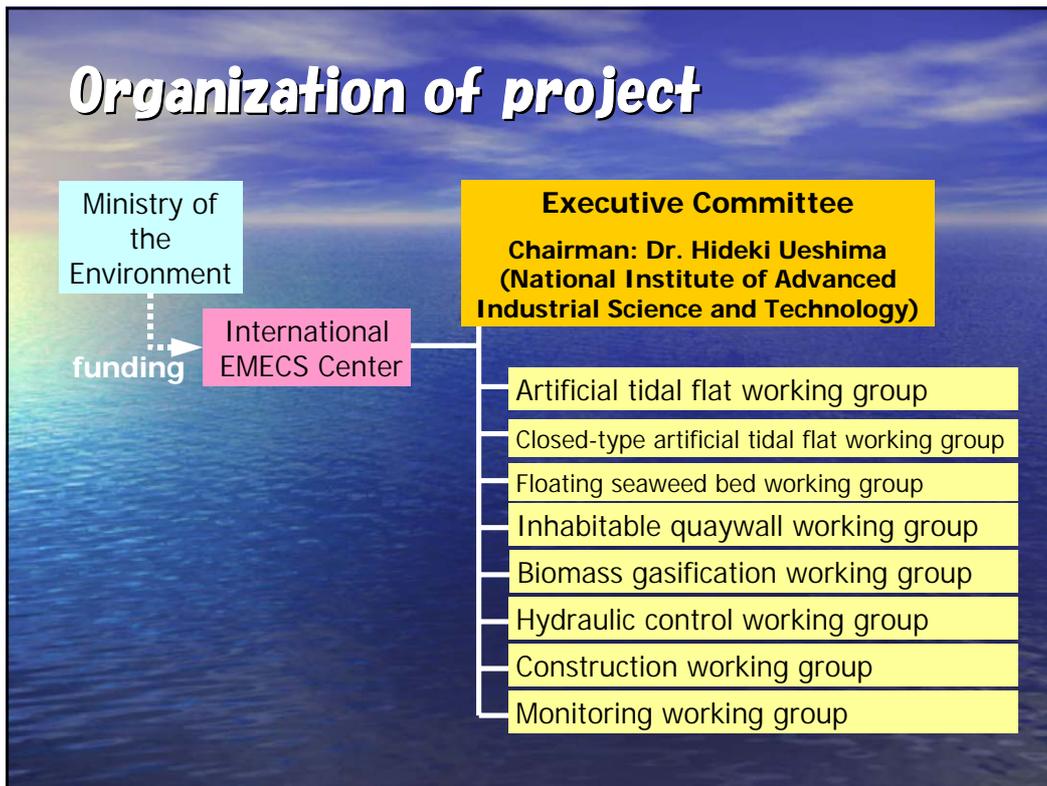


Octopus

17. Summary

- Experiments of 4 technologies combined together within the same water area in port of Amagasaki is being conducted to achieve the goal (end of FY2003)
 - Accumulated data is being evaluated to achieve the best mix
 - Proposal for environmental restoration in Port of Amagasaki to the Amagasaki century 21st forest project
 - “packaging” environmental restoration technologies will be conducted by studying and examining the flow and the result of this research

Organization of project



Working groups

Artificial tidal flat	Dr. Yoshiyuki NAKAMURA	The Port and Airport Research Institute
	Dr. Kunio KOHATA	National Institute for Environmental Studies
	Takatoshi TANIMOTO	Hyogo Prefectural Institute of Public Health and Environmental Sciences
Closed-type artificial tidal flat	Dr. Koji OTSUKA	Associate Professor, Osaka Prefecture University
	Dr. Hirokazu TSUJI	Obayashi Corporation
Inhabitable quaywall	Dr. Yasunori KOZUKI	Associate Professor, The University of Tokushima
Floating seaweed bed	Dr. Hiroshi KAWAI	Professor, Kobe University Research Center for Inland Seas
Biomass gasification	Dr. Koji OTSUKA	Associate Professor, Osaka Prefecture University
	Dr. Toru IDA	Kobe Steel, Ltd
Hydraulic control	Dr. Munehiro Yamasaki	National Institute of Advanced Industrial Science and Technology
Construction/maintenance	Dr. Hirokazu TSUJI	Obayashi Corporation
Monitoring	Dr. Takashi NAKANISHI	Sohgoh Kagaku Inc

Environmental learning program for citizen at experimental site



Observing crabs, sea hares etc. found on artificial tidal flat



Watching demonstration of water purification by bivalves



Water quality test (COD) at experimental site



Visit to experimental site

Survey on Washed-up Driftage along the Coasts in Northwest Pacific Region



Northwest Pacific Region Environmental Cooperation Center
(NPEC)



Kuyoshihama Beach in Nagasaki, Japan

Outline of the Survey

1 Objective

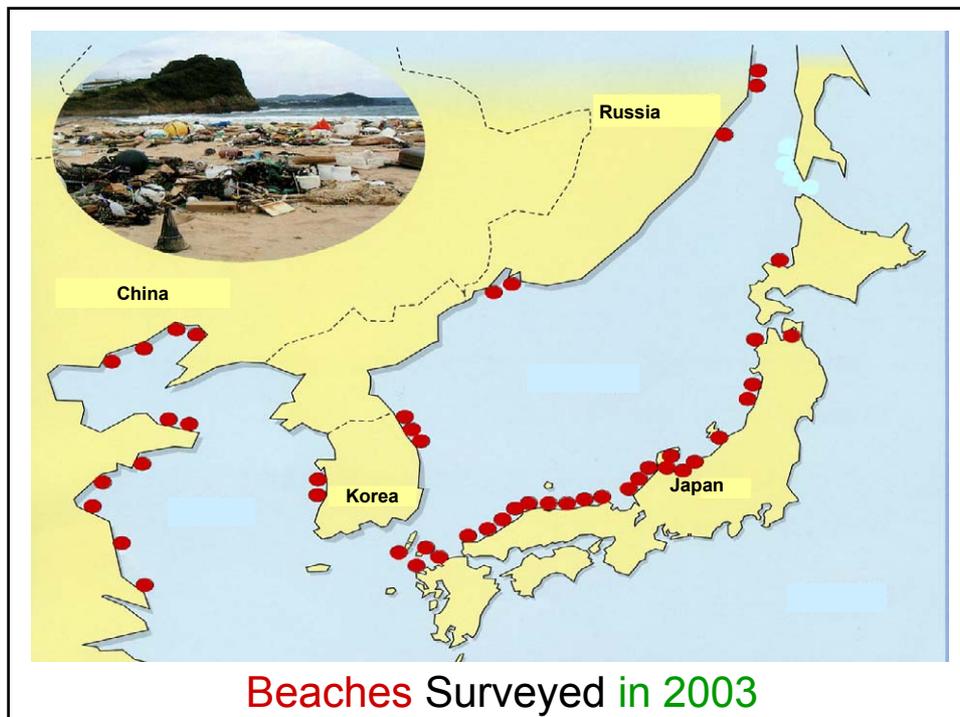
- Monitoring the distribution and abundance of marine litter.
- Raising public awareness toward the importance of protecting marine environment.

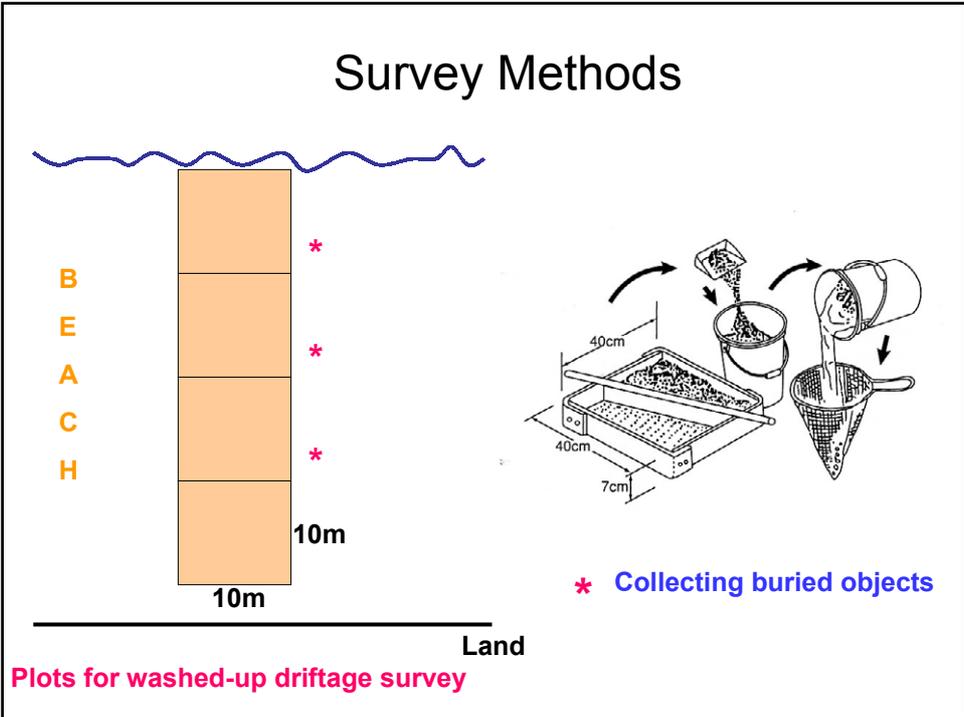
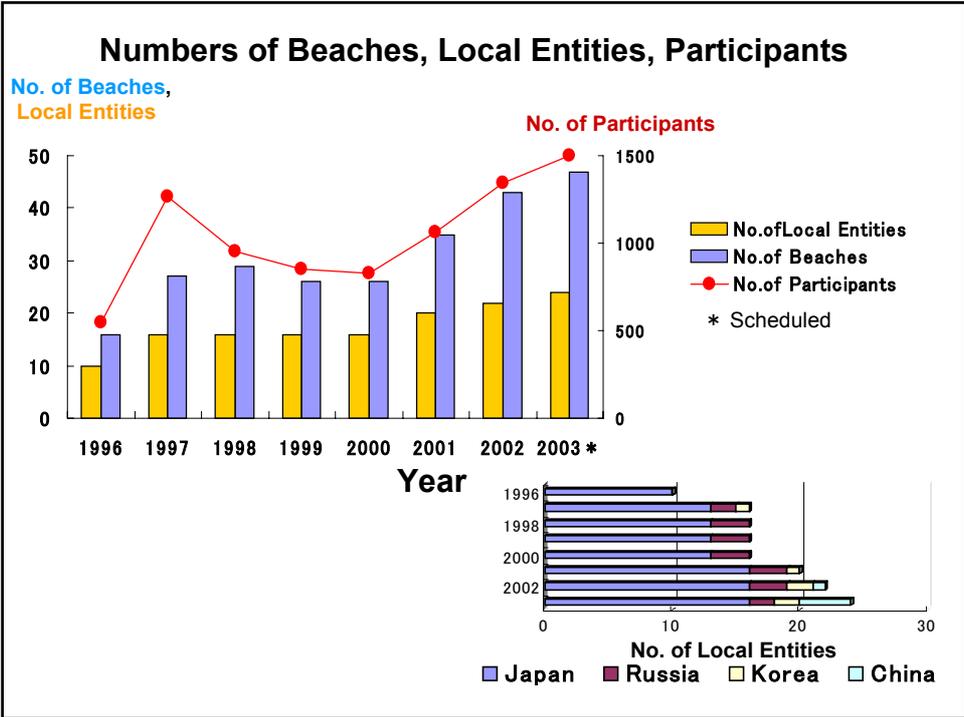
2 Area

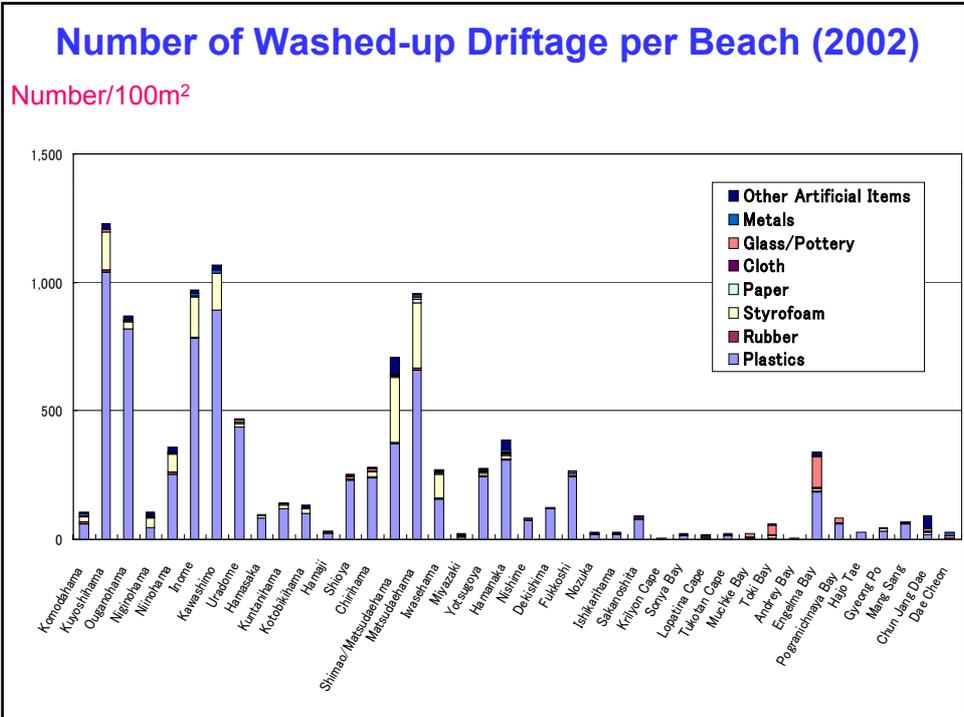
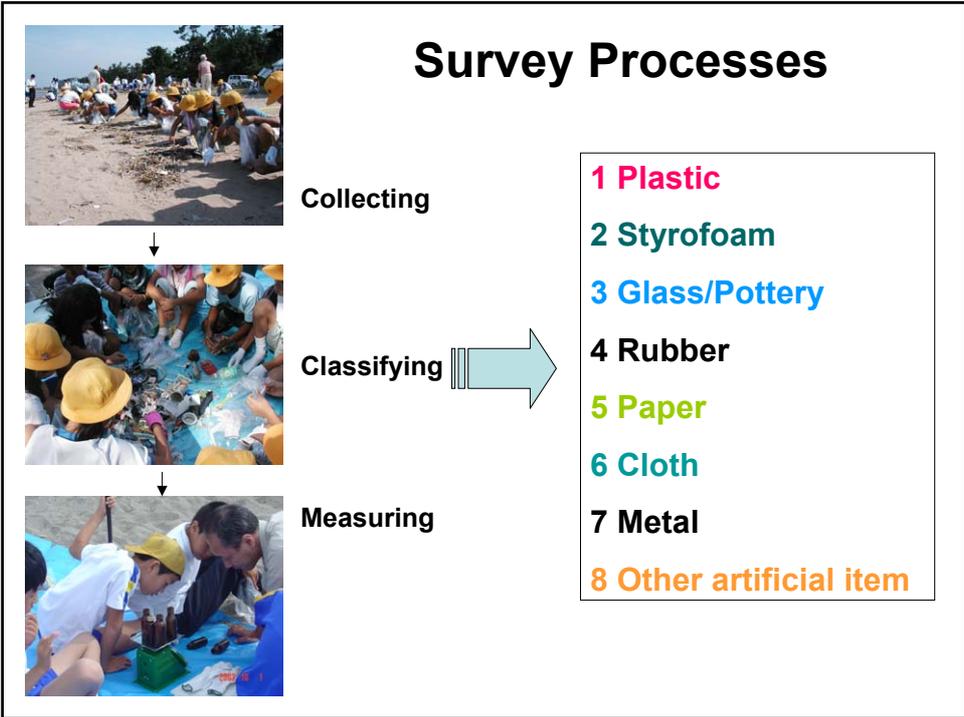
The beaches in the local entities of Japan, China, Korea and Russia along the coast lines of Northwest Pacific.

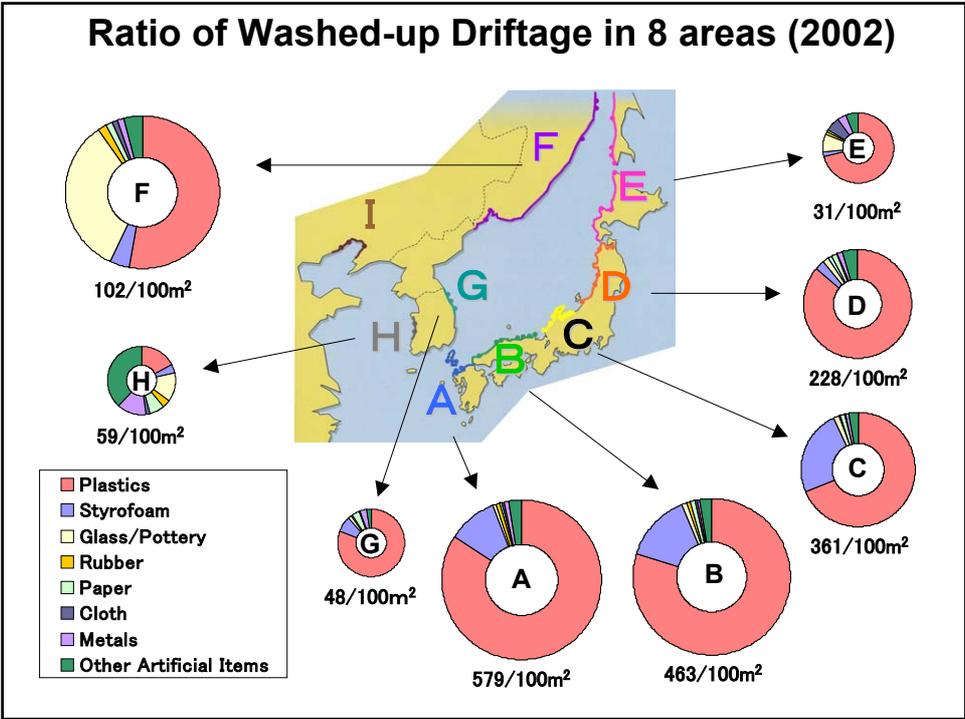
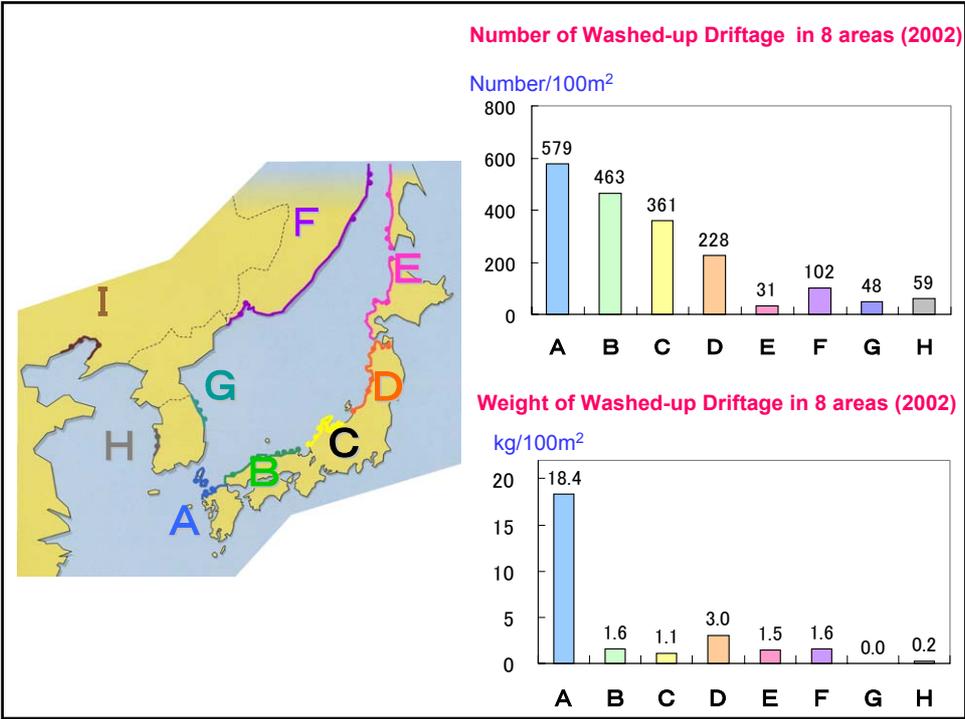
3 Participants

Municipalities, Students, NGO and so on.









Raising Public Awareness Towards Protection of Marine Environment

- Publication of pamphlets in 4 languages



Japanese



Pamphlets

Chinese, Korean,
Russian

- Children forum on beach clean-up activities for the protection of the marine environment: Autumn 2004, Japan



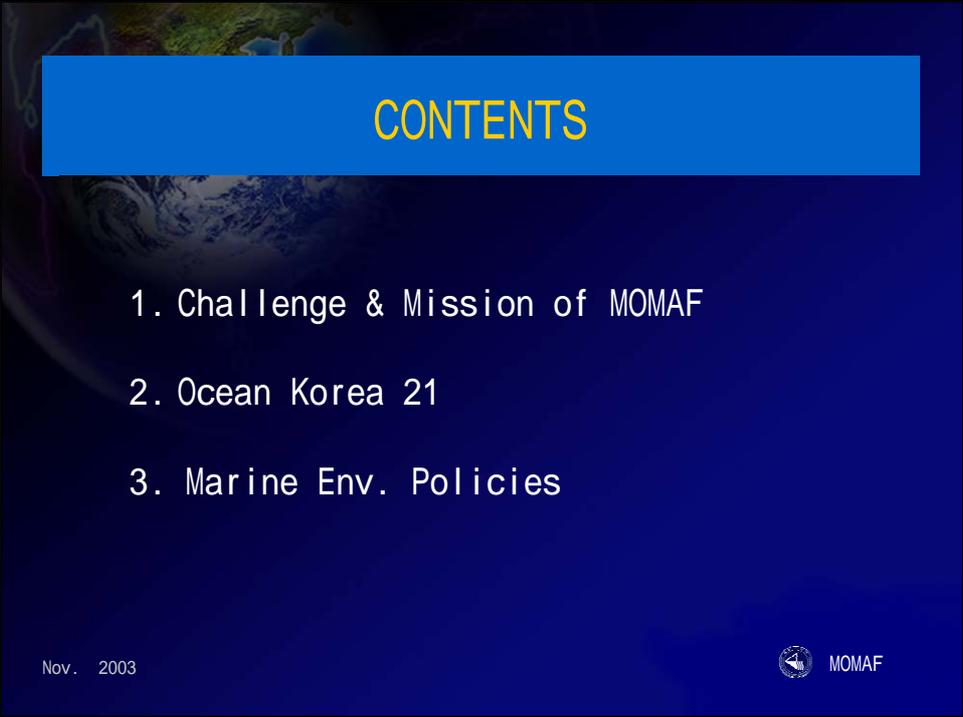
THANK YOU



Ocean Korea 21 and Marine Environment

Deputy director Sokchang Kwon
Ministry of Maritime Affairs & Fisheries

Nov. 2003



CONTENTS

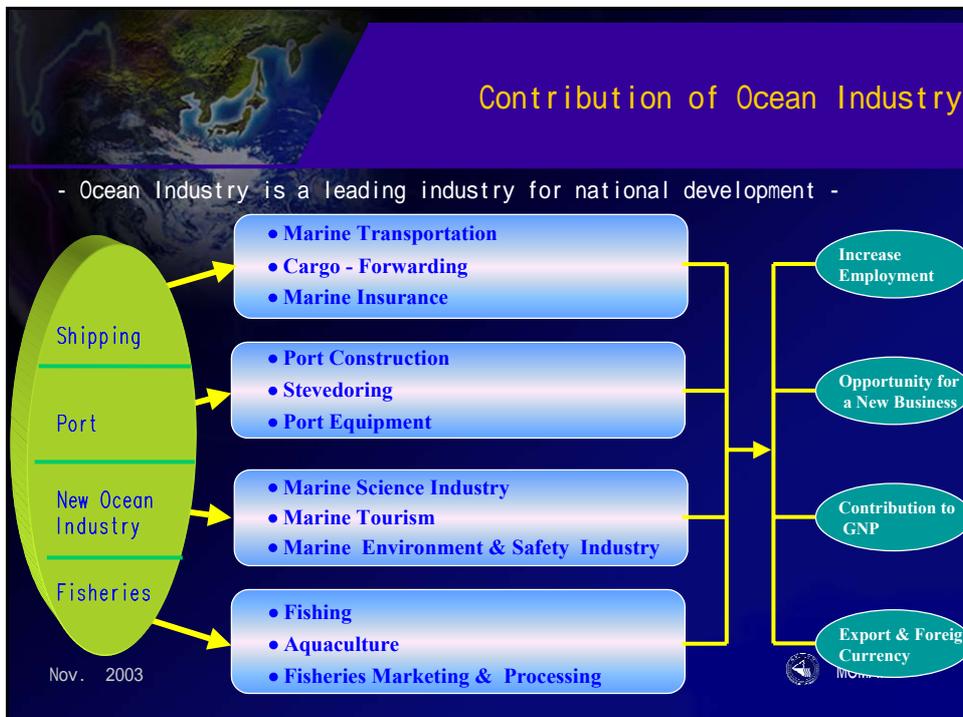
1. Challenge & Mission of MOMAF
2. Ocean Korea 21
3. Marine Env. Policies

Nov. 2003



1. Challenge & Mission of MOMAF

Nov. 2003



Ocean Power of Korea

10th Ocean Power in the world

Value added : \$ 33 billion
(7 % of GDP)

- Shipbuilding: 1st in the world(12.7 mn ton)
- Seaborne cargo: 6th (0.5 bn ton)
- Ships registered: 8th (25 mn ton)
- Distant Water Fishery: 3rd (791,000 ton)

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MOMAF's Mission

- Development and integration of marine policy
- Promotion and development of fisheries
- Advancement of marine science and technology
- Conservation of the marine environment
- Coastal Zone Management
- Development of shipping industries and safety of ships
- Port development and operation

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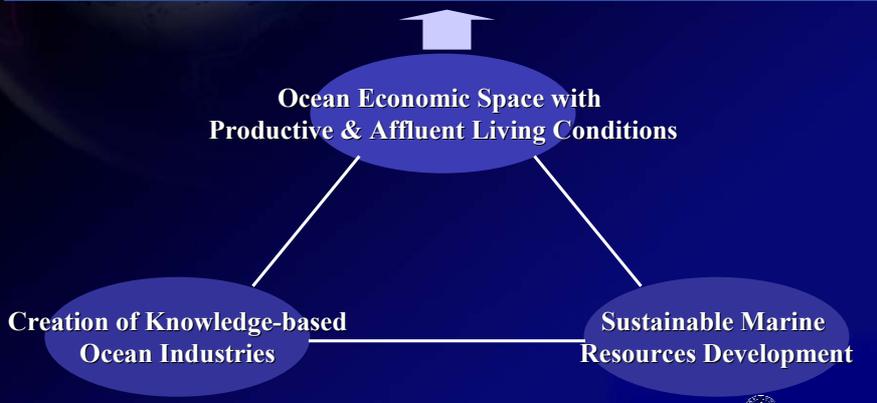
2. OCEAN KOREA 21

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Vision of OK 21

Advanced Korea through BLUE REVOLUTION



```
graph TD; A([Ocean Economic Space with Productive & Affluent Living Conditions]) --> B([Creation of Knowledge-based Ocean Industries]); A --> C([Sustainable Marine Resources Development]); B --- C;
```

Nov. 2003



Strategies in OK 21

1. Paradigm shift of managing ocean economic space internationally and globally
2. Preservation of clean and safe ocean environment
3. Promotion of knowledge-based ocean industry → **Sea Grant Program**
4. Enhancement of international competitiveness in ocean service industries and infrastructure
5. Remodeling fishing structure and communities
6. Efficient utilization of marine resources (energy, mineral & space)
7. Strengthening international cooperation and North-South Korean collaboration

21 Fields and 100 Large-scale Projects

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Target of OK 21 in 2010

Implementing OK21 in 2000	Target of OK21 in 2010
• Contribution of Ocean industry	<div style="display: flex; justify-content: space-between;"> GDP 7 % 8.6 % </div>
• Container handling capacity	<div style="display: flex; justify-content: space-between;"> 5.5 mnTEU 29.5 mn TEU </div>
• Freights from int'l shipping	<div style="display: flex; justify-content: space-between;"> \$ 10 bn \$ 30 bn </div>
• Fisheries product	<div style="display: flex; justify-content: space-between;"> 2.9 mn ton 3.9 mn ton </div>
• DSBM, Oil & Gas	<div style="display: flex; justify-content: space-between;"> explore produce </div>

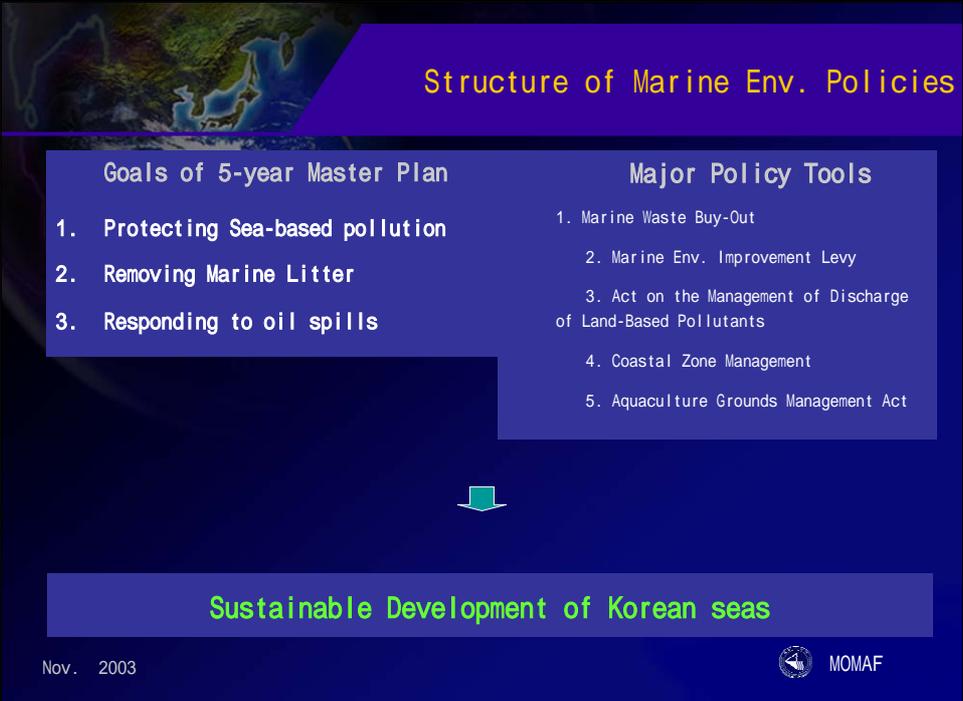
Jumping into 5th Ocean Power

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3. Marine Environment Conservation

Nov. 2003



Structure of Marine Env. Policies

Goals of 5-year Master Plan	Major Policy Tools
<ol style="list-style-type: none">1. Protecting Sea-based pollution2. Removing Marine Litter3. Responding to oil spills	<ol style="list-style-type: none">1. Marine Waste Buy-Out2. Marine Env. Improvement Levy3. Act on the Management of Discharge of Land-Based Pollutants4. Coastal Zone Management5. Aquaculture Grounds Management Act

↓

Sustainable Development of Korean seas

Nov. 2003





Overview of the 5-year master plan

- 1. Establishing Management system of Marine litter
- 2. Protecting marine environment from sea-based activities
- 3. Enhancing marine pollution response and treatment capacities

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■ Establishing Management system of Marine litter

- Removing litter from the water and disposing of marine litter effectively.
- Korea is developing "Multi-functional marine litter collecting ship" and "On-ship marine litter disposal system".

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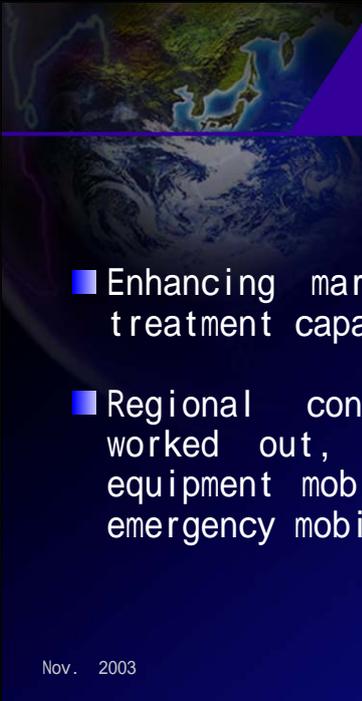
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■ Protecting sea-based pollution

- Korea banned the use of TBT on ships step by step from '00, and by the end of this year.
- To protect the marine ecosystem from ship's ballast water, we are developing eco-friendly ballast water managing technology.

Nov. 2003



■ Responding to Oil Spills

- Enhancing marine pollution response and treatment capacities
- Regional contingency plans have been worked out, including disposal skills, equipment mobilization procedures, and an emergency mobilization system.

Nov. 2003





Major Policy Tools

1. Marine Waste Buy-Out
 - Buying marine wastes collected during fishing operations. As of the end of September 2003, 90 metric tons of marine debris had been collected.
2. Marine Waste Disposal and Marine Environment Improvement Levy
 - Imposing levies on the marine waste discharge companies. The fund will be used for marine environment improvement projects.

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Major Policy Tools

3. Act on the Management of Discharge of Land-based Pollutants unto the Coast
 - Surveying status of sources of land-based pollutants and establishing suitable management plans.
4. Enacting "Aquaculture Grounds Management Act"
 - Eliminating polluted sediments of the aquaculture grounds, and practicing "aquaculture grounds resting periods system".

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Major Policy Tools

5. Sustainable Coastal Zone Management and the Designation of Marine and Coastal Protected Areas

- Integrating the policies of different government ministries regarding the conservation and development of the coastal zone ranging from 500-1,000m land-ward from the coastline.
- Designating Wetland Protected Areas and Ecosystem Conservation Areas.

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Dear Colleagues!

In my presentation I would like to mention the following.

According to the federal legislation of the Russian Federation one of the directions of action of the Ministry of Natural Resources of the Russian Federation, as you know, is protection of marine environment from pollution and state control in this sphere.

What are the main issues of serious concern in this area?

1) Taking into account the perspectives of the marine regions development, currently the major concern is certainly the development of carbohydrates at the continental sea shelves.

The extraction of forecasted volumes of carbohydrates under the insufficient environmental protection basis of many oilfields can lead to serious negative consequences. They are reflected in the continuous pollution of marine environment under the technological processes as well as pollution under emergency cases. In such conditions pollution of marine environment in the locations of the carbohydrates extraction can lead to catastrophic impacts, especially for biotic resources of seas.

Therefore, the issues related to prevention of pollution of marine environment under development of carbohydrates at the continental shelves are undoubtedly the number one problem in environmental protection in the marine areas nowadays.

Thus one of the main questions that must be resolved under development of the carbohydrates resources at the continental shelves is creation of the environmentally safe technical means of extraction and technologies of exploration, construction and exploitation of carbohydrates fields at different stages of development. The method of "0" discharges is already practiced by the Russian platforms in Caspian and Baltic Seas.

2) The exclusive economic zone of the Russian Federation is actively used by the water crafts of the transport, passenger and fishery fleets. The sea routes link the ports of Russia and other countries and reach the areas of traditional fishing.

Therefore, the marine navigation is a source of high danger to the marine ecosystems due to possible emergency situations in transportation of oil refinery products and liquid chemicals. We remember a loss of a 14-tons container with the chemically active plasticizer by Dupont company in August this year occurred in the Pacific Ocean and the consequences that this container caused to the seal-rookery in the "Komandorski" protected area.

The share of accidental oil outflows in total pollution of the environment of the great oceans is up to 13%. It is oil that causes the most environmental danger due to its high polluting capacity. The main sources of sea pollution nowadays continue to be the marine water crafts, first of all the oil tankers and petroleum production.

Clearly in the regions of carbohydrates extraction the complimentary industries are also actively developing, particularly transportation of hazardous cargo that leads to increasing pollution of the marine transportation means and marine environment, while the main potential danger is due to the forecasted emergency situations, particularly in the water crafts that transport highly dangerous categories of hazardous cargo.

3) However the most negative impact on the marine environment of sea shelves areas is caused by sea ports where the sea water is highly polluted due to high concentration of water crafts on the limited area of sea. Besides the high intensity of sea transportation especially at the entrances to sea ports increases the probability of emergency oil outflows.

The statistics shows that less than 10% of emergency situations occur in the open sea, while the major part of them occurs at the entrances to the ports and in the areas of higher navigation danger, such as narrowness and shoals.

Therefore the water crafts collisions and beaching are the main causes of accidents in the higher risk zones.

One of the most important directions of activity of the Ministry of Natural Resources of the Russian Federation is ***protection of water biological resources of the internal seas, territorial seas, continental shelves and exclusive economic zone of the Russian Federation***. Such activity includes development of the corresponding legislative, regulatory and economic basis, implementation of the state ecological expertise, state ecological control and monitoring in protection of water bioresources and biodiversity conservation.

Reduction of population of the most massive and intensively exploited water bioresources is dealt with the massive overfishing above the allowed quotas as well as illegal (without permission) fishing. Outstanding scales of such illegal activity are related to some valuable marine bioresources such as crabs, salmon, etc.

Reduction of the quantity of quotas issued to the Russian fishermen is dealt with reduction of the population of the marine bioresources and, as a result, leads to social problems and reduction of wellbeing of the population of the sea coast regions.

Based on the experience of the control checking implemented by the special inspections of the Ministry of Natural Resources of the Russian Federation one can state that illegal fishing and export of water bioresources from the exclusive economic zone and continental shelves of the Russian Federation is a result of non-compliance with the requirements of bioresource protection and conservation of their biodiversity, and particularly overfishing above the existing quotas, violation of conditions of fishing (by regions, types of water bioresources, timing, means of catching, etc.), or fishing by the Russian and foreign water crafts without the corresponding permissions.

In result of that, the Russian state budget does not receive significant income from realization of marine bioresources, the quotas for the Russian fishermen are reduced, the social and economic situation in the subjects of the Russian Federation with the basements of fishing fleets and fishery enterprises is worsening.

In 9 months of 2003 the state inspectors of the special inspections of the Ministry of Natural Resources of the Russian Federation held 12455 inspections aimed at control of the compliance with the legislation on nature use and environmental protection under the economic and other activity in the sea and continental shelves.

In result of the control checking, 5436 cases of violation of the legislation of the Russian Federation on the nature use and environmental protection, 4159 of which were removed.

According to the acts of inspection and directives of the state inspectors the fines for violation of the legislation of the Russian Federation imposed directly or through courts amounted to some 10,0 mln roubles.

A number of administrative cases are under consideration now.

The requests for compensation of damage to the natural resources exceed 890 mln roubles, while about 66 mln roubles were already received.

The illegally caught objects and means of fishing were realized for 10,2 mln roubles.

91 requests to stop activity of the enterprises were issued.

Decline in the indicators of activities of the special marine inspections of the Ministry of Natural Resources of the Russian Federation in 2003 is dealt with the fact that according to the new Administrative Code of the Russian Federation from 1 July 2002 on the inspections lost their right to investigate and apply administrative responsibility for violation of the legislation of the Russian Federation on the marine bioresource use as according to the Articles 8.16, 8.17, 8.37 the responsibility for that is posed on the Federal Customs Service of Russia, that contradicts with the existing legislation of the Russian Federation (Federal Laws "On continental shelves of the Russian Federation", "On exclusive economic zone of the Russian Federation", etc.). The Ministry of Natural Resource of the Russian Federation submitted its proposals on the changes to the Administrative Code (to the government of the Russian Federation and the Ministry of Justice of Russia), however the proposals of the Ministry are not accepted by now.

The inspections held by the state marine inspectors of the Ministry of Natural Resources of the Russian Federation practically in all seas regularly discover the cases of violation of the legislation of the Russian Federation and international norms on prevention of pollution of marine environment.

The largest number of violations affecting sea pollution is dealt with violation of the accepted rules of prevention of sea pollution by oil containing and other sewage waters, solid and other waste from the water crafts (in ports and transportation) at bunkering, cargo loading and other works as well as at the emergency cases, etc.

The most often the violations are related to documentation on registration of the operations with the harmful substances, improper discharges of oil containing and other sewage waters and waste.

The violations related to protection of marine bioresources and biodiversity conservation that were discovered by the inspectors of the Ministry of Natural Resources of the Russian Federation are mainly dealt with non-compliance to the conditions of the permission documents by zones, regions, quotas, types of resources, timing of fishing, illegal fishing, use of illegal means of fishing, etc.

The most character is the violation dealt with overfishing and improper registry of fishing.

A large number of violations in the areas of protection and use of living resources is related to the absence of the permission documents on fishing, registration documents, use of improper consosaments with the stamps of nonexisting inspectors of the State Customs Committee of Russia.

The analysis of the information obtained in 2002-2003 about the character of collaboration of the special marine inspections of the Ministry of Natural Resources of the Russian Federation and the State Procureess of the Russian Federation, particularly with the transport and environmental procurers allows to mention that in general, practically in all subjects of the Federation and regions of Russia there is a positive character of interaction between these structures. Such interaction is directed to identification and prevention of violations of the legislation of the Russian Federation in the area of nature use and environmental protection in the coastal areas, internal seas, territorial seas, exclusive economic zone and continental shelves of the Russian Federation.