

Northwest Pacific Action Plan

**Status of the Implementation of the
NOWPAP Medium-term Strategy
2012 - 2017**

NOWPAP Regional Coordinating Unit

Northwest Pacific Action Plan

**Theme 1. Integrated coastal area and river
basin management (ICARM)**

Objective 1.1: To develop and adopt a harmonious approach towards *coastal and marine environmental planning* on an integrated basis and in a pre-emptive, predictive and precautionary manner;

Objective 1.2: To develop and adopt a harmonious approach towards *the integrated management of the coastal and marine environment and its resources*, in a manner which combines protection, restoration, conservation and sustainable use.

Indicative activities from MTS 2012-2017	Relevant Activities/Projects being implemented and status
Setting Ecological Quality Objectives for marine and coastal environment based on the regular assessment	Discussion paper on EQOs prepared by RCU and RACs for the 18 th IGM; this activity might be implemented in 2014-2015 by POMRAC and other RACs
Developing regional guidelines for integrated coastal planning/management	ICARM Regional Overview and ICARM Guidelines are under preparation by a consultant
Organizing regional workshops and training courses on ecosystem based management, marine spatial planning and ecosystem valuation	Have not proceeded yet; might start in 2014-2015

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**Theme 2. Regular assessments of the
state of the marine environment**

Objective 2: To assess regional marine environmental conditions, making the best use of the available expertise and information from NOWPAP member state, RACs and other organizations and projects

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Identification of ecologically significant marine and coastal areas by regular assessments	CBD Regional Workshop on EBSAs attended by NOWPAP representatives; Japan and Russia are preparing nominations for EBSAs
Recommendations for ICARM actions based on scientific assessments	Have not proceeded yet, but "Regional overview and guidelines for ICARM" will be completed in 2013 (?)
<ul style="list-style-type: none"> - The 2nd "State of Marine Environment Report" (with focus on ecosystem services, climate change impacts and biodiversity conservation) planned to be completed in 2013 (?) - NOWPAP contributed/co-organized two regional workshops related to "World Ocean Assessment (2010-2014)" in 2012 (Sanya in China and Bangkok in Thailand) - NOWPAP representative participated in the regional workshop on "Social and economic indicators for status and change within north Pacific ecosystems" in 2013 (organized by PICES) 	

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Theme 3. Pollution prevention and reduction

Objective 3.1: To develop and adopt effective measures for mutual support in emergencies, collaboration in the management of contiguous bodies of water, and cooperation in the protection of common resources as well as in the prevention of coastal and marine pollution

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Development of technical guidelines and manuals related to marine pollution prevention and response	Have not proceeded yet
Organization of regular oil spill exercises and training	- 4 th NOWPAP oil spill joint exercise conducted in May 2012 in Yeosu, Korea - "Manual on conduct of oil spill response operational exercise" being developed, led by Russia and China
Collection of information and experiences on the prevention and reduction of coastal & marine pollution	Information system being updated on marine pollution preparedness and response every year
Implementation of joint response activities in case that major oil/HNS spill accidents occur	No major real oil/HNS spill accidents occurred

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Theme 3. Pollution prevention and reduction

Objective 3.1: To develop and adopt effective measures for mutual support in emergencies, collaboration in the management of contiguous bodies of water, and cooperation in the protection of common resources as well as in the prevention of coastal and marine pollution

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Development and operation of satellite based early warning system for oil spill monitoring	Have not proceeded yet, but the marine environmental watch system planned to be updated by CEARAC in 2013
Organization of regular ML workshops and ICC campaigns	2012 NOWPAP ICC and WS in Vladivostok, Russia and 2013 NOWPAP ICC and WS in Okinawa, Japan
Setting pollution reduction targets	Have not proceeded yet

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Theme 4. Biodiversity conservation

Objective 4: To develop the Regional Action Plan on Marine and Coastal Biodiversity Conservation

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Identification of endangered species in the NOWPAP region	Have not proceeded yet; DINRAC will start this activity in 2014-2015
Information sharing on current situation, including invasive alien species (MIS)	Regional Workshop on MIS in Oct. 2012, Qingdao, China funded by APW, and Preparation of Atlas of MIS, led by DINRAC
Development of Ecological Quality Objectives (EQOs) for marine biodiversity conservation	Discussion paper on EQOs prepared by RCU and RACs for the 18 th IGM; might be used by POMRAC and other RACs
Collection of information and experiences for the design of new Marine Protected Areas (MPAs)	- Joint NOWPAP/NEASPEC workshop in March 2013; - Compilation and analysis of information for the assessment of existing MPAs in the NOWPAP region (to be completed in 2013), led by CEARAC

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Theme 4. Biodiversity conservation

Objective 4: To *develop the Regional Action Plan* on Marine and Coastal Biodiversity Conservation

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Application of international regulations for the prevention of alien species invasions (through controlling ballast waters)	Have not proceeded yet
Development of habitat maps for coastal ecosystems using remote sensing and GIS techniques	- Assessing damage and recovery process of seagrass beds in Miyagi prefecture after the 2011 tsunami, co-work by NPEC, and Univ. of Tokyo (funded by the <i>Mitsui & Co., Ltd. Environment Fund</i>), by CEARAC; - CEARAC will start new project on seagrass in 2014-2015

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Theme 5. Climate change impacts

Objective 5.1: To *assess/understand climate change impacts* on marine and coastal ecosystems in the NOWPAP region;
Objective 5.2: To *mitigate climate change* in the NOWPAP region.

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Compilation and analysis of information on warming of sea surface temperature, ocean acidification, sea level rise and associated impacts on ecosystems	" Assessment of the impacts of global warming on coastal and marine ecosystems in the Northwest Pacific " funded by <i>APN</i> , led by Dr. Jung (Korea); expected to be completed in April 2014
Regional modeling of parameters related to climate change	Have not proceeded yet
Regional workshop on Blue Carbon initiative	Have not proceeded yet
Recommendations to reduce CO₂ emissions from ships	Have not proceeded yet
Analysis of marine environmental issues related to offshore carbon capture and storage (CCS) applications in the region	Have not proceeded yet

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Theme 6. Information management

Objective 6: To collect and record *environmental data and information at the DINRAC website* which will serve as a repository of all relevant available data and as a source of information for specialists, administrators, decision-makers and general public

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Regular collection of data and information on major marine environmental issues	" Annual summary of major marine environmental data " available on the DINRAC website
Regular update of existing databases and maintaining links through DINRAC website	Being updated regularly by DINRAC; will be continued in 2014-2015

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Theme 7. Public awareness raising

Objective 7: To develop more strategic approach for *better communications and enhanced public awareness* in the NOWPAP region (from 14th IGM resolution)

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Attending regional and global meetings to increase NOWPAP visibility	Participated in several meetings (Yeosu Expo 2012, EAS Congress 2012, PICES Annual Meeting, Global Meeting of Regional Seas Conventions and Action Plans, etc.)
Preparing and distributing promotional goods, publications , etc.	Prepared and distributed at international and local events attended by NOWPAP representatives

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Theme 8. Regional cooperation

Objective 8.1: *Integrated and well-managed execution of projects and activities* under the NW Pacific Action Plan;
Objective 8.2: *Efficient network of RACs* addressing marine environmental issues of regional and global priority.

Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Regular meetings between RAC Directors and RCU	- Regular communication via face to face talks, email, phone and Skype - Providing guidance and suggestions by RCU at RAC FPMs
Attending each other Focal Points Meetings (FPMs) for better information exchange and	- RAC representatives participated in other RAC FPMs every year
Cooperation among RACs on the collection and sharing of data and information as well as through joint activities	- Sharing data and information on ML (led by CEARAC and DINRAC) and SOMER-2 (led by POMRAC)

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Theme 9. Administrative, financial and operational support

Objective 9.1: Integrated and coordinated approach to *financial control, human resource management, financial and administrative reporting* and consolidated decision-making;
Objective 9.2: *Efficient use of resources* through improved monitoring and control of programme budget and extra-budgetary resources;
Objective 9.3: *Mobilization of external funds*.



Indicative activities from the approved MTS 2012-2017	Relevant Activities/Projects being implemented and status
Provision of financial transactions/record keeping and administrative services in accordance with UN rules	Transactions/record keeping provided by RCU in coordination with RACs
Maintaining positive financial balance while implementing NOWPAP PoW	Difference between budgetary allocations and actual expenditures being minimized
Timely reporting and recording of expenditures	Service requests completed timely
Search for external funds and submission of project proposals to appropriate donors	<i>Successful mobilization of external funding from UNEP/GPA, APN, JFGE in 2012-2013</i>

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Resource mobilization in 2012 - 2013

In line with the *NOWPAP Resource Mobilization Strategy*, funds for NOWPAP activities are mobilized from external sources

Projects granted funding/leading organizations	Amount (US \$)	Funding sources
Regional workshop on <i>Marine Invasive Species problems</i> in Northwest Pacific region/ <i>DINRAC</i>	32,250	APN
Promotion of <i>best practices and measures for prevention of ML input from land-based sources/CEARAC</i>	5,000	UNEP/GPA
National report of <i>China's environmental NGOs role in ML control/CRAES-China</i>	10,000	UNEP/GPA
Compilation of <i>best practices in dealing with ML in fishery, aquaculture and shipping/MERRAC</i>	5,000	UNEP/GPA
Building capacity on <i>marine litter management</i> in the NOWPAP region/ <i>NPO Okinawa O.C.E.A.N (Japan)</i>	33,600 32,000 50,000	APN JFGE MOFA of Japan

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Some issues CEARAC could consider

Indicative activities from the approved MTS 2012-2017

- Setting *Ecological Quality Objectives* for marine and coastal environment based on the regular assessment – together with POMRAC and other RACs
- Setting *pollution reduction targets* (e.g., nutrients)
- Organizing regional workshop on *Blue Carbon* initiative

Thank you!

Report on the Implementation and expenditure of CEARAC activities for 2012-2013 biennium

**NOWPAP CEARAC FPM11
11-12 September 2013**

Summary of CEARAC activities for 2012-2013 biennium

Activity	
Meetings	2 annual FPMs and 1 Expert Meeting
Web Maintenance	Update of information on HABs and Ocean RS
<Projects>	
-Marine Biodiversity	- Preparing the regional report for conservation of marine biodiversity and sustainable use of marine ecosystem services
-Eutrophication	- Refining the NOWPAP Common Procedure and conducting assessment of eutrophication status
- Remote Sensing	- Organizing the training course on RS data analysis
Cooperation & Coordination	Participation in and/or joint organization of meetings, workshops, etc.
RAP MALLI	Report on measures/best practices for ML prevention
Watch system	Upgrade of Marine Environmental Watch System (in-kind)

FPM10

(17-18 April 2012)

- ◆ Acknowledged outcomes of CEARAC activities for 2010-2011
- ◆ Reviewed the progress of CEARAC activities for 2012-2013 with revised budget (US\$ 112,000)
- ◆ Adopted revised ToR of CEARAC FPM

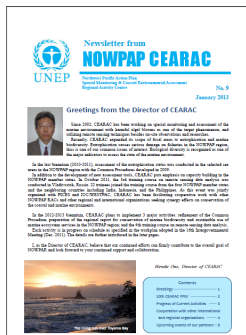
Expert Meeting on Marine Biodiversity and Eutrophication

(5-6 August 2013)

- ◆ Reviewed current CEARAC activities
 - regional report on marine biodiversity conservation and sustainable use of marine ecosystem services
 - refined NOWPAP Common Procedure and case studies on eutrophication assessment
- ◆ Reviewed seagrass/seaweed mapping activities
- ◆ Discussed draft proposals on specific projects for 2014-2015 on marine biodiversity, eutrophication, and seagrass/seaweed mapping

Website Maintenance

- ◆ Regular information update
 - HAB Integrated website
 - NOWPAP Ocean Remote Sensing Portal
- ◆ Electric distribution of CEARAC newsletter (Jan. 2013)
- ◆ Upgraded Marine Environmental Watch System (Mar. 2013)



Specific Projects

- ◆ Preparation of the regional report for conservation of marine biodiversity and sustainable use of marine ecosystem services in the NOWPAP region
- ◆ Refinement of the NOWPAP Common Procedure for eutrophication assessment towards the assessment of the whole NOWPAP region
- ◆ Organization of the 4th NOWPAP training course on remote sensing data analysis

Cooperation and Coordination

- ◆ Events that CEARAC held/will hold:
 - NOWPAP/NEASPEC Joint Workshop on Marine Biodiversity Conservation and Marine Protected Areas in the Northwest Pacific (13-14 March)
 - Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region (5-6 August)
 - NOWPAP-PICES Joint Training Course on Remote Sensing Data Analysis (21-25 October)

◆ Events that CEARAC joined/will join:

- 16th MERRAC FPM (17-21 June)
- 11th DINRAC FPM (24-25 July)
- PICES 2013 Summer School on Ocean Observing Systems and Ecosystem Monitoring (19-23 August)
- 11th POMRAC FPM (9-10 October)
- PICES 2013 Annual Meeting (11-20 October)
- NOWPAP ICC and Workshop (24-26 October)
- 18th NOWPAP IGM (4-6 December)

◆ Contribution to the State of Marine Environment Report (SOMER-2) by POMRAC

- <Subchapters to which CEARAC contributed>
- primary production
 - sustainable use of the biodiversity resources
 - nutrient and organic matter excessive inputs – HAB
 - eutrophication and hypoxia
 - marine litter

Activities on RAP MALI (Activities on marine litter)

- ◆ Regular work: Compiled marine litter monitoring data on beaches
- ◆ New work: Published regional report on measures and best practices for prevention of marine litter input from land-based sources in the NOWPAP region (March 2013)



Fund Mobilization

- ◆ Financial support from UNEP GPA (US\$5,000)
 - Preparing a brochure based on the regional report in 4 languages of the member states to be distributed in the NOWPAP ICC and other occasions
- ◆ Applying for 2013 APN Calls for Proposals
 - Submitted summary proposal on the assessment of hypoxic zones and their negative impacts on marine ecosystems (August 2013)

Planned budget and expected expenditure for 2012-2013

Activity	Planned Budget (US\$)			Expenditure (US\$)		
	2012	2013	Total	2012	2013	Total
<Meetings> 2 FPMs + 1 EM	27,000	27,000	54,000	20,444	33,556	54,000
Web Maintenance	2,000	2,000	4,000	0	4,000	4,000
<Projects>						
- Marine						
Biodiversity	6,000	14,000	20,000	0	20,000	20,000
- Eutrophication	16,000	4,000	20,000	0	20,000	20,000
- RS Training	0	10,000	10,000	0	10,000	10,000
Cooperation and Coordination	2,000	2,000	4,000	2,000	2,000	4,000
Watch System		In-kind	In-kind		In-kind	In-kind
Total	53,000	59,000	112,000	22,444	89,556	112,000



**Workplan for preparing the regional report
for conservation of marine biodiversity
and
sustainable use of marine ecosystem services
in the NOWPAP region**

CEARAC

The 11th CEARAC FPM
11-12 September 2013

Background

➤Aichi Target
“10% of the world sea areas are designated as
Marine Protected Area by 2020”

There are huge gap between the Aichi Target and
current situation in the NOWPAP region.
⇒Increase of MPAs in the NOWPAP region

Objective

To provide useful information for policy planning on
marine biodiversity conservation of each member state
To explore a new possibility and concept for
conservation of marine biodiversity and sustainable
use of marine ecosystem services

Progress of tasks

1. Collecting information on existing MPAs and
other related issues in the NOWPAP region
2. Analysis on the status of MPAs in the
NOWPAP region
3. Organizing a workshop for discussing
possibility of applying other concept for marine
biodiversity conservation
4. Preparing of regional report

**1. Collecting information on existing
MPAs and other related issues in the
NOWPAP region**

China: Dr. Huang BEI
Japan: CEARAC
Korea: Dr. Yoon LEE
Russia: Dr. Anatoli Kachur

The national reports were reviewed at the
workshop and expert meeting, and finalized.

**2. Analysis on the status of MPAs
in the NOWPAP region**

Based on information reported in national
reports, CEARAC analyzed the status of MPA in
the NOWPAP region.
The results were summarized as regional report.

Future action:
Additional analysis

3. Organization of a workshop

NOWPAP/NEASPEC Joint Workshop on Marine Biodiversity Conservation and Marine Protected Areas in the Northwest Pacific

Timing: 13-14 March

Participants

- Experts of each member state
- Governmental officers of each member state
- Representative from HELCOM, IOC/WESTPAC and PICES

Outcomes

4. Preparation of regional report

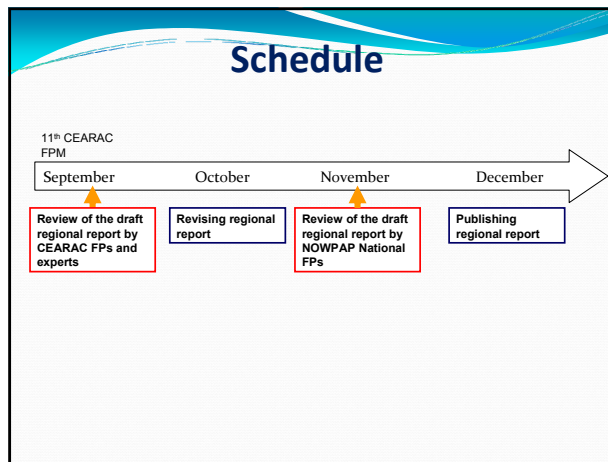
The first draft of regional report is attached as Annex.

Future action:

- Review by CEARAC FPs and experts (September)
- Revising regional report including proofreading (October)
- Review by NOWPAP National FPs (November)
- Publication (December)

Expected outcome

The regional report is expected to be used by policy makers of each member state in understanding the current situation and challenges of existing MPAs in the NOWPAP region, and in considering possible measures and directions for enhancing marine biodiversity conservation in the future.



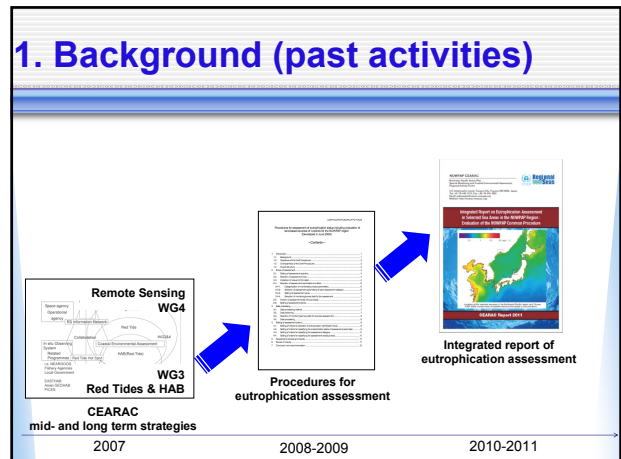
Budget

Task	Conduct	Output	Completion	Contractor	Budget (US\$)
Collecting information and analyzing the monitoring and management status in the selected MPAs	2012 Q2	- Collected data and information - Report on monitoring and management of the selected MPAs	2013 Q1	Expert of China	2,000
				CEARAC	In-kind
				Expert of Korea	2,000
				Expert of Russia	2,000
Organizing a workshop	2012 Q4 or 2013 Q1	New concept for marine biodiversity conservation and sustainable use of marine ecosystem services for the NOWPAP region		CEARAC and Experts of each member state	10,000
Preparing the regional report	2013 Q4	Regional report		CEARAC	4,000
Total					20,000


Report of the activity on refinement of the NOWPAP Common Procedure for eutrophication assessment towards the assessment of the whole NOWPAP region

Genki Terauchi
NOWPAP CEARAC

September 11, 2013



1. Background



Technical issues of the NOWPAP Common Procedures

- Parameters
 - Surface or bottom?
 - Seasonal variation?
- Reference values
 - Different national standards
 - Different approach for DO level
- Classification system
 - Adaption of one out, all out approach?
 - Adoption of rating system?

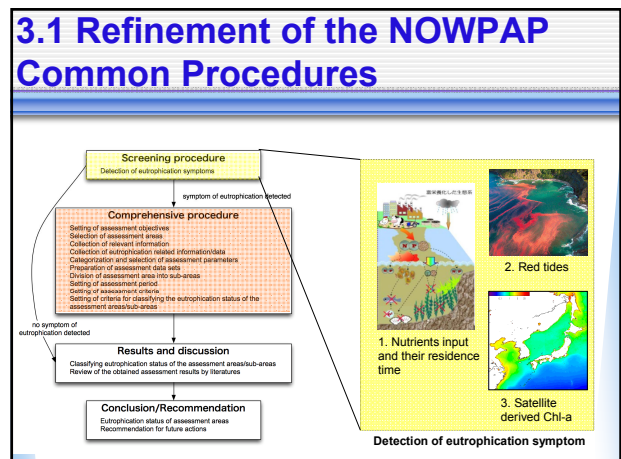
Refinement of the Common Procedure to improve its suitability towards assessment of eutrophication status of the whole NOWPAP region was suggested.

2. Objectives

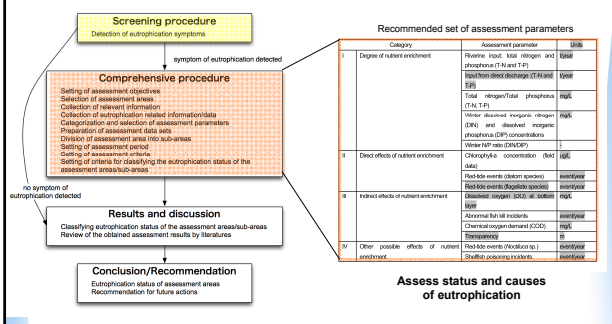
- To improve **the suitability of the NOWPAP Common Procedure by the refinement work** and to apply the refined procedure to the existing or newly selected sea areas.
- **Literature review** will also be conducted to evaluate the methodology of the revised NOWPAP Common Procedure
- To develop a **regional overview** of the eutrophication status **in the NOWPAP region.**

3.1 Refinement of the NOWPAP Common Procedures

Country	Selected sea areas	Nominated experts
China	Jiazhou Bay	Dr. Zhiming YU, Chinese Academy of Science, Institute of Oceanology
Japan	Northwest Kyushu Sea Areas Toyama Bay	Northwest Pacific Region Environmental Cooperation Center (NPEC)
Korea	Jinhae Bay	Dr. Changkyu Lee South-east Sea fisheries Research Institute, National Fisheries Research and Development Institute
Russia	The Peter the Great Bay	Dr. Pavel Tishchenko, Hydrochemistry Laboratory, Department of the Ocean Geochemistry and Ecology, V. I. Il'ichev Pacific Oceanological Institute, Far Easter Branch of Russian Academy of Sciences



3.1 Refinement of the NOWPAP Common Procedures



3.3 Preparation of regional overview of the eutrophication assessment for the NOWPAP region.

- Case study reports (Annex 2)
 - China and Russia – completed
 - Japan and Korea – work in progress
- Provisional table of contents of the regional overview (Annex 3)
- Discussed and agreed at the CERAC Expert Meeting on 5-6 August 2013



Case study results in Jiazhou Bay, China

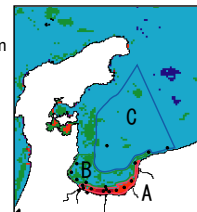
- Nutrients concentration
 - Increasing in all sub-areas
 - High in sub-area A and low in sub-area B & C
- Red tide events
 - Decreasing in sub-area A and increasing in sub-area C, no-trend in sub-area B
 - Low in sub-area A and high in subareas C



Nutrients concentration may not have a direct relationship with ecological effect in coastal area. Further research on the cause of increasing red-tides are also needed to prevent ecological or economic loss in Jiazhou Bay

Case study results in Toyama Bay, Japan

- Nutrients concentration
 - Increasing in total nitrogen (TN) input from Jinzu River in sub-area A (coastal area)
- Chlorophyll-a
 - Annual mean Chl-a was higher than the reference value in sub-area A



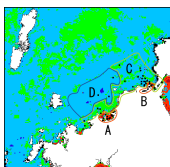
Reduction of TN input from the Jinzu River may be necessary to improve the eutrophication status in Toyama Bay Coastal Area

Case study results in North Kyushu Sea Area, Japan

- Hakata Bay
 - Increasing TN (from seaweage plan input)
 - Decreasing TP
 - High Chl-a concentration
 - High frequency of red tide events

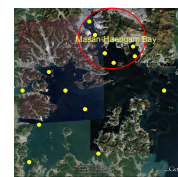
Input of nitrogen and phosphorus should be adjusted for a balanced biological productivity
- Dokai Bay
 - Decreasing TN and TP
 - Low frequency of red tide events
 - DO at bottom was higher than the reference value
 - Decrease trend in COD was observed
 - High Chl-a concentration

Water quality management has been successful in Dokai Bay



Case study results in Jinhae Bay, Korea

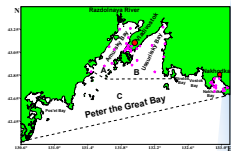
- Jinhae Bay
 - High status but decreasing trend in TN, TP and COD
 - Decreasing trend in red tide events (both diatom and Noctiluca sp.)
 - High and increasing winter N/P
 - High status but no trend in Chl-a



Jinhae Bay and Masan Bay, Korea

Case study results in the Peter the Great Bay, Russia

- Peter the Great Bay
 - Sub-areas A
 - High status and increasing trend was observed
 - Riverine input of DIN and DIP, DIN, DIP, and DISI.
 - Chl-a annual
 - DO (low status and decreasing)
 - Hypoxic condition was recorded in summer
 - Sub-area B
 - Annual min DO were low and no trend(bottom)
 - Other parameters were low status and no trend
 - Sub-area C
 - High status and no trend was observed annual maxima Chl-a
 - Other parameters were low status and no trend



Peter the Great Bay, Russia

Provisional table of contents of the regional overview

4 OVERVIEW OF EUTROPHICATION STATUS OF NOWPAP SEA AREAS IN MEMBER STATE

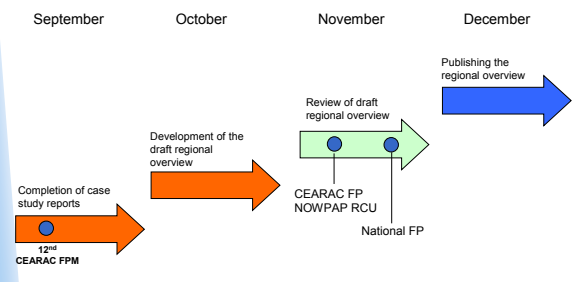
- 4.1 China
 - 4.2 Japan
 - 4.3 Korea
 - 4.4 Russia
- } Review of literatures collected in Annex A

6 EXISTING POLICIES AND AVAILABLE DATA RELATED TO THE MANAGEMENT OF EUTROPHICATION IN THE NOWPAP MEMBER STATES

- 6.1 China
 - 6.2 Japan
 - 6.3 Korea
 - 6.4 Russia
- } Asking the nominated experts to provide list of available data in each country

5. Schedule

2013



NEW ACTIVITY
FOR MARINE BIODIVERSITY CONSERVATION
IN THE 2014-2015 BIENNIUM

**PILOT ASSESSMENT ON THE IMPACTS OF MAJOR
THREATS TO MARINE BIODIVERSITY IN
SELECTED AREAS OF THE NOWPAP REGION**

NOWPAP/CEARAC

11th CEARAC FPM
11-12 September 2013

An expected new project

- ⊙ **Activity which can contribute to NOWPAP Medium-term strategy**
Development of Regional Action Plan on Marine and Coastal Biodiversity Conservation
Development of Ecological Quality Objectives for marine biodiversity conservation
Prevention of alien species invasions
- ➔ **Impact assessment of threats to marine biodiversity as basis for consideration of action plan, objectives and policy measures**
- ⊙ **Activity which can be implemented in all member states based on data availability, country priority and availability of experts**
- ➔ **Selection of focused topics by each member state with certain flexibility**
- ⊙ **Activity which can lead to future development of biodiversity assessment tools for the NOWPAP region**
- ➔ **Main objectives are to understand priority topics and verify data availability in each member state, as well as to collect various cases on possible assessment methodologies.**

1. Background

Workshop on Marine Biodiversity Conservation and Marine Protected Areas in the Northwest Pacific (13-14 March 2013)

Participants:
Experts on marine biodiversity, representatives from NOWPAP partners

Agreement at the workshop

- Data availability
- Development of an assessment tool
- Selection indicators

1. Background

CEARAC's responsibility;
Coordination of regional activities for assessment of the state of the marine and coastal environment

CEARAC has developed
"Procedures for assessment of eutrophication status including evaluation of land-based sources of nutrient for the NOWPAP region" (2008)

CEARAC tried to develop new assessment tool for marine biodiversity conservation from 2010

1. Background

NOWPAP Medium-term Strategy 2012-2017

- Regular assessment of the state of the marine environment
- Biodiversity conservation
Regional Action Plan on Marine and Coastal Biodiversity Conservation

➔ CEARAC prepared a workplan on "Development of procedures for comprehensive marine environmental assessment in the NOWPAP region"

1. Background

Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific (5-6 August 2013)

Participants:
Experts on marine biodiversity and eutrophication, representatives from PICES

Opinions from participants

- Further clarification of the title, scope and tasks
- Focus more on the relevance to marine biodiversity conservation

1. Background

Threats to marine biodiversity

- Land-based pollution
- Eutrophication
- Destructive fishing
- Losses of physical habitats
- Invasion of non-indigenous species
- Climate change

(Convention on Biological Diversity, 2008)

1. Background

In 2010

UNEP Regional Seas Programme
“Global Synthesis”

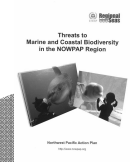
Data and information on the threat to marine and coastal biodiversity in regional seas.



NOWPAP

“Threats to Marine and Coastal Biodiversity in the NOWPAP Region”

Fish Catches, Nutrient Loading, Shipping, Sea Surface Temperature



Pilot Assessment on the impacts of major threats to marine biodiversity in selected of the NOWPAP region

2. Objectives

- ◎ To assess the impacts to marine biodiversity due to threats commonly evident in the NOWPAP region in selected study sites on a pilot basis in order to identify possible components, data requirements and methodologies for future development of biodiversity assessment tools applicable in the NOWPAP region

3. Main tasks

- ◎ Selection of specific topics and study site for assessment
- ◎ Implementation of pilot assessment on selected topics
- ◎ Organization of workshop
- ◎ Development of regional report

3-1 Selection of specific topics and study sites for assessment

Selection of specific topics for pilot assessment

- Eutrophication
- Non-indigenous species
- Habitat loss

Selection of study sites for assessment

- On-going eutrophication case study areas
- MPAs selected in the on-going CEARAC project

Selection of assessment topics and study site (EXAMPLE)

North Kyushu sea area
Assessment topics
- Eutrophication
Parameters for assessing threats
parameters of the NOWPAP procedures
Parameters for assessing impact
change in the composition/loss of species
- Habitat loss
Parameters for assessing threats
percentage of loss of seagrass/seaweed bed
Parameters for assessing impacts
change in the scale/amount of marine biological
resources

Daisen-Oki National Park
Assessment topics
- Non-indigenous species
Parameters for assessing threats
name and distribution of NIS
Parameters for assessing impacts
number of species in competition, predation

Case study sites in eutrophication assessment

Selected MPAs for regional report

3-2 Implementation of pilot assessment on selected topics

Experts who are nominated by FP will collect data and information, and implement pilot assessment

Remark:
Before starting pilot assessment, CEARAC will collect information on assessment used by other international organization.
For experts' reference, information and research result will be provided for their pilot assessment.

3-3 Organization of workshop

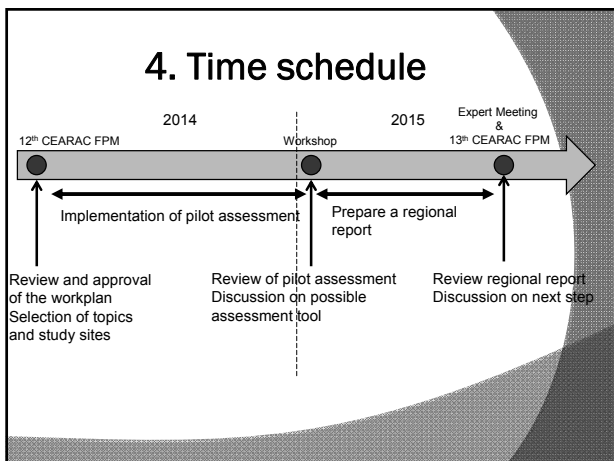
Objective:
1. Review of pilot assessment in each member state
2. Consideration of future assessment tools for marine biodiversity conservation in the NOWPAP region

Expected participants:
Experts of pilot assessment
Representatives from NOWPAP partners
Experts of relevant international organizations

Timing:
2015 March

3-4 Development of regional report

A regional report on threats to marine biodiversity in the NOWPAP region will be prepared based on the pilot assessment in each member state.



5. Budget

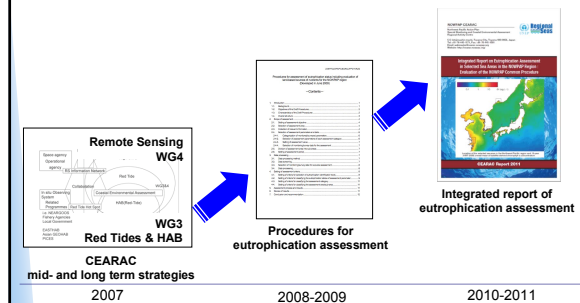
-Collection of available data -Implementing feasibility study	Chinese expert	3,000 USD (4,500 USD)
	Japanese expert	3,000 USD (4,500 USD)
	Korean expert	3,000 USD (4,500 USD)
	Russian expert	3,000 USD (4,500 USD)
Developing assessment procedures		2,000 USD
Organizing workshop		10,000 USD
Total		24,000 USD (30,000 USD)

Proposal for trial application of the screening procedure of the NOWPAP Common Procedure for eutrophication assessment

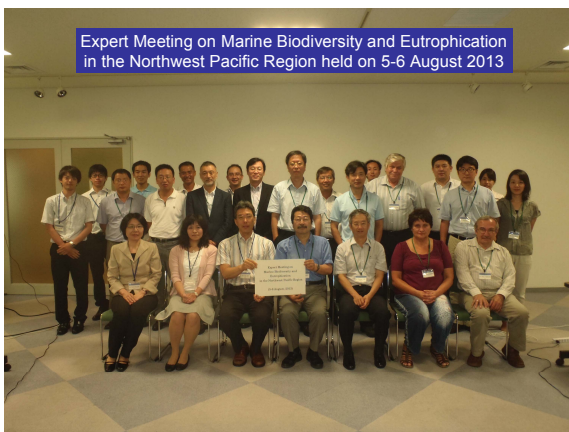
Genki Terauchi
NOWPAP CEARAC

September 11, 2013

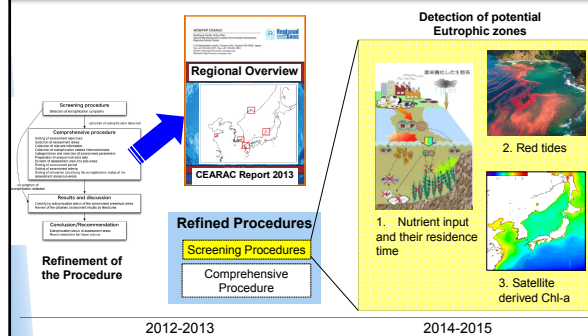
1. Background (past activities)



Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region held on 5-6 August 2013



1. Background (ongoing and planned activities)



1. Background (relation with NOWPAP MTS)

Theme 2. Regular assessments of the state of the marine environment

Expected accomplishment

•Contributed to provide NOWPAP member states reliable information and analysis of the state of marine and coastal environment in the NOWPAP region, including (but not limited to) biodiversity, **eutrophication**, harmful algal blooms, chemical pollution, marine litter, oil and HNS spills, invasive alien species, climate change impacts

Theme 3. Pollution prevention and reduction

Suggested activities

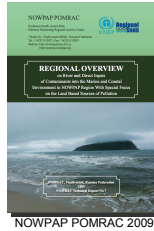
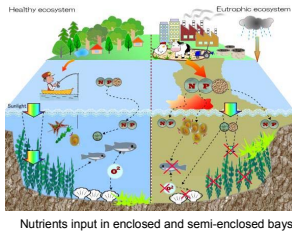
•Contribute to collection of information and experiences on **the prevention and reduction of coastal and marine pollution** in NOWPAP member states
•Contribute to setting pollution reduction targets

2. Objective

- To encourage **autonomous use of the NOWPAP Common Procedure** by the member states
 - applying the Screening Procedure of the refined NOWPAP Common Procedure **to the entire NOWPAP sea area** in order to **identify potential eutrophic zones** as well as to verify the suitability of the Screening Procedure;
 - providing coastal managers **with training on the refined NOWPAP Common Procedure**.

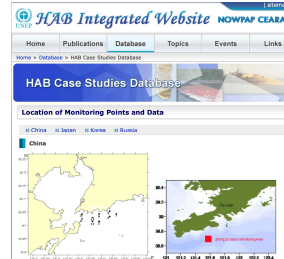
3. Main tasks

- 3.1.1 Nutrients input and their residence time



3. Main tasks

- 3.1.2 Collection of data and mapping of occurrences of red tides



HAB Case Study Report in China, Japan, Korea and Russia

[Red tide event Information](#)

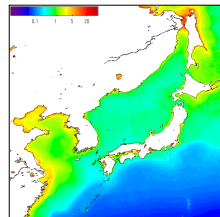
Toxin event information

Water quality information

3. Main tasks

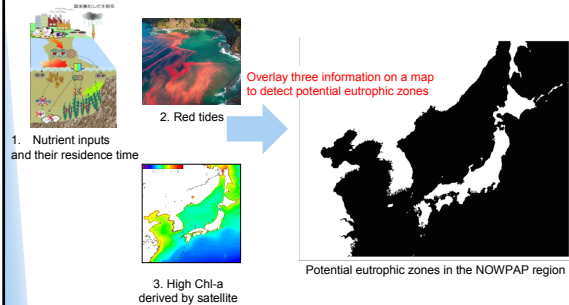
- 3.1.3 Development of satellite map of chlorophyll-a concentration (Chl-a)

- Sensors
 - SeaWiFS (Overview)
 - MODIS (Aqua)
- Duration
 - 1998 to 2011
- Spatial resolution
 - 4 km



3. Main tasks

- 3.1.4 Mapping potential eutrophic zones



3. Main tasks

- 3.2 Organization of training workshops on the eutrophication assessment and countermeasure techniques

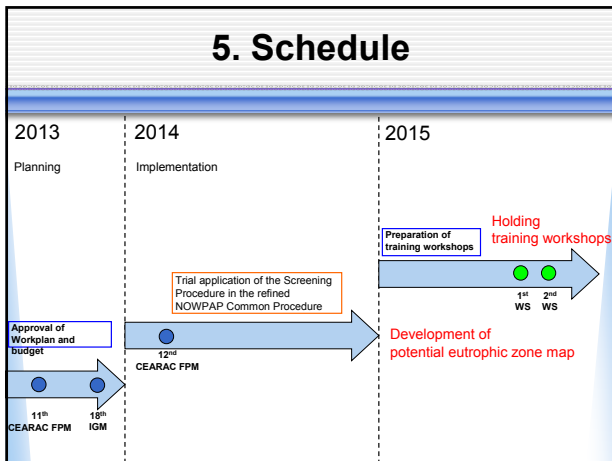
- One or two-day long training workshops for coastal managers (e.g. local government officers)
- Lecture on NOWPAP Common Procedure for effective countermeasures against eutrophication
- CEARAC will prepare the program and training materials of the workshop in the language of host country.
- Two places in the 2014-2015 biennium.

4. Expected outcomes

- To identify potential eutrophic zones on a map.
- Raising awareness on eutrophication status
- Enhanced application of the NOWPAP Common Procedure



Addressing most of the eutrophic zones in the long run



6. Budget

Task	Timing	Output	To be completed	Main body	Budget (US\$)
Trial application of the Screening Procedure of the refined NOWPAP Common Procedure*	2014 Q2	Assessment results based on the Screening Procedure of the refined NOWPAP Common Procedure	2014 Q3	Expert in China	3,000
				Japanese Consultant	3,000
				Expert in Korea	3,000
				Expert in Russia	3,000
Organization of a training workshop (twice) on eutrophication assessment and countermeasures	2015 Q3	Organization of workshops on eutrophication assessment and countermeasures	2015 Q3 to Q4	Experts in NOWPAP member states and CEARAC	8,000 (4,000)
Total					20,000 (16,000)

Proposal for case studies on seagrass and seaweed mapping in selected sea areas in the NOWPAP region

Genki Terauchi
NOWPAP CEARAC

September 11, 2013

1. Background

Biome	Area (ha)	Total value per ha (t/ha ² yr ⁻¹)	Total global flow value (t/yr ² x10 ⁹)
Estuaries	180	22,832	4,110
Seagrass/seaweed beds	200	19,004	3,801
Coral reefs	62	6,075	375
Shelf	2,660	1,610	4,283
Tidal marsh/mangroves	165	9,990	1,648
Total coastal biome	3,267	4,352	14,217
Tropical forest	1,900	2,007	3,813
Temperate/boreal forests	2,955	302	894
Total forest biome	4,855	970	4,707

Values of coastal biome is higher than terrestrial biome Costanza et al., (1997)

1. Background



Published in 2009
CO₂ absorbed by aquatic biota

NOWPAP Medium Term Strategy
Theme 4 biodiversity conservation

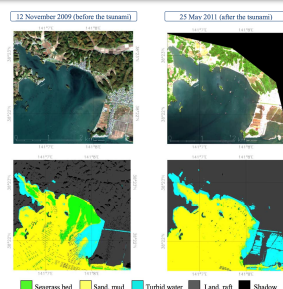
Suggest activities
Contribute to developing habitat maps for coastal ecosystems using remote sensing and GIS techniques

1. Background

Assessment of damage on seagrass/seaweed by high resolution satellite images

Research period
July 2011 to March 2014

Sponsored by
Mitsui & Co., Ltd. Environment Fund



Providing maps to local municipality

Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region held on 5-6 August 2013

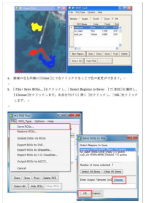


2. Objective


- To develop a manual to derive a seagrass and seaweed distribution map with satellite images.
 - The developed manual will be applied and verified in selected case study areas in the NOWPAP member states.
 - The developed techniques are expected to contribute to building information infrastructure for conservation of marine habitat and serve as one of the major coastal environmental assessment tools in the NOWPAP region.

3. Main tasks


- 3.1 Development of a manual for seagrass and seaweed beds mapping with satellite images**



NPEC developed manual



Free or reasonable satellite data



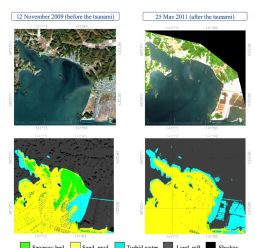
The **BEAM** Project
Free software for satellite data analysis

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3. Main tasks

- 3.2 Mapping seagrass and seaweed distribution in selected case study areas**

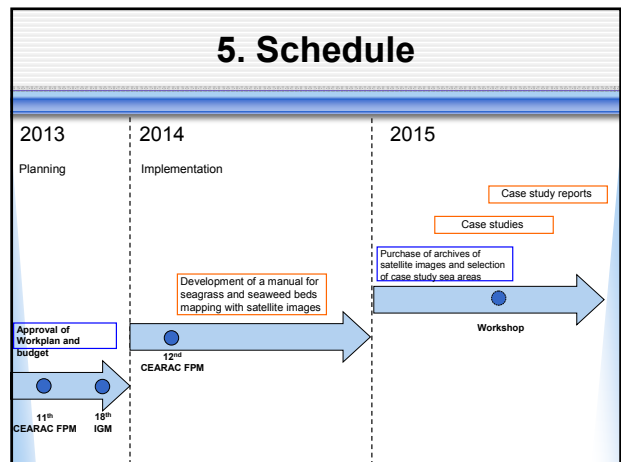
- Detecting changes of seagrass/seaweed distribution from 2 satellite images with several years intervals.
- What are the possible factors?
 - Anthropogenic eutrophication?
 - Aqua culture?
 - Temperature increase?
 - Coastal Development?



4. Expected outcomes

- Cost effective method to map seagrass/seaweed distribution
- Easier identification of the prioritized areas where seagrass and seaweed beds are being/have been disappeared.
- First step for developing habitat maps for coastal ecosystems using remote sensing and GIS techniques proposed in the NOWPAP MTS

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6. Budget

Task	Timing	Output	To be completed	Main body	Budget (US\$)
Development of a manual for seagrass and seaweed beds distribution with satellite images	2014 Q2	Archive of high-resolution satellite images	2014 Q3	NPEC Consultant	4,000
Purchase of archives of high-resolution satellite images	2014 Q4	Archive of high-resolution satellite images	2014 Q4	CEARAC	4,000
Case studies on seagrass and seaweed mapping in selected sea areas in the NOWPAP member states	2015 Q1 to Q2	Maps of seagrass and seaweed beds distribution in respective case study sea areas	2015 Q3	Expert in China	3,000
				Japanese Consultant	3,000
				Expert in Korea	3,000
				Expert in Russia	3,000
Organization of a workshop on seagrass and seaweed beds mapping in the Northwest Pacific region	2015 Q3	Report and proceeding of a workshop	2015 Q3	CEARAC	(15,000) Depends on budget
Total					20,000 (35,000)

**Draft workplan and budget of
CEARAC activities
for the 2014-2015 biennium
and recommendation to
the 18th NOWPAP IGM**

**NOWPAP CEARAC FPM11
11-12 September 2013**

**Proposed CEARAC Activities
for 2014-2015 biennium**

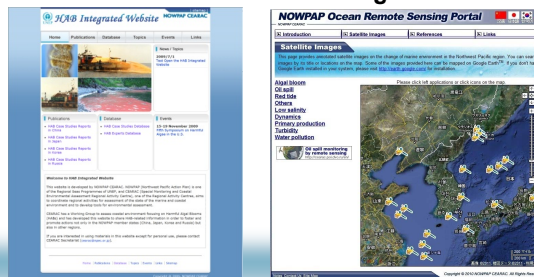
- ◆ 2 FPMs and 1 Expert Meeting
- ◆ Maintenance of Websites
- ◆ Specific Projects
 - marine biodiversity
 - eutrophication assessment
 - seagrass mapping
- ◆ Cooperation and Coordination
- ◆ RAP MALI

**12th & 13th FPMs
and Expert Meeting**

- ◆ **CEARAC 12th FPM - spring 2014**
 - to review implementation plans of approved activities
- ◆ **CEARAC 13th FPM - autumn 2015**
 - to review progress of on-gong activities
 - to discuss draft workplans for 2016-2017
- ◆ **Expert Meeting - summer 2015**
 - to provide advice on potential activities for 2016-2017

Maintenance of Websites

- ◆ Regular upload of latest information on HABs and ocean remote sensing



Specific Projects in 2014/15

2012-2013	2014-2015
1. Marine biodiversity - Regional report for conservation of marine biodiversity focusing on MPAs	1. Marine biodiversity - Pilot assessment on the impacts of major threats to marine biodiversity
2. Eutrophication - Refinement of NOWPAP Common Procedure - Regional overview	2. Eutrophication - Trial application of screening procedure of NOWPAP Common Procedure
3. Remote Sensing Training	3. Seagrass mapping - Case studies on seagrass and seaweed mapping applying RS

1. Marine Biodiversity

- ◆ **Pilot assessment on the impacts of major threats to marine biodiversity**
 - Focus on major threats to marine biodiversity (eutrophication, non-indigenous species, and loss of habitat)
 - Assess impacts of such threats to marine biodiversity in selected sea areas
 - Hold a workshop to discuss possible components, data requirements and methodologies for future development of assessment tools

2. Eutrophication

- ◆ **Trail applications of the screening procedure of the NOWPAP Common Procedure**
- Apply screening procedure to entire NOWPAP sea area
- Identify potential eutrophic zones for comprehensive assessment
- Organize training workshops for coastal managers to promoting autonomous use of the NOWPAP Common Procedure

3. Seagrass mapping

- ◆ **Case studies on seagrass and seaweed mapping in selected sea areas**
- Develop a manual
- Conduct case studies to map temporal changes of seagrass/seaweed distribution using satellite images
- Analyze causes of distribution changes
- Evaluate the applicability of manual to other areas in the NOWPAP region

Cooperation and Coordination

Potential areas of work and partners

- ◆ marine biodiversity with DINRAC, PICES, IOC/WESTPAC and YSLME
- ◆ Eutrophication with POMRAC and IOC/WESTPAC
- ◆ Seagrass and seaweed mapping with DINRAC and PICES
- ◆ HAB with PICES

RAP MALI

- ◆ **Regular work**
Collect and harmonize/summarize monitoring data from the member states and submit to DINRAC for compilation
- ◆ **New work**
Develop a report of case studies on basin-wide collaborative actions for prevention of marine litter input from land-based sources in Japan

Budget Plans for 2014-2015 biennium

- ◆ **Budget Plan A**
US\$ 120,000
- ◆ **Budget Plan B**
US\$ 125,000 – based on the current level of annual contribution
- ◆ **Budget Plan C**
US\$ 147,000 – ideal case (if all member states contribute US\$ 125,000 annually)

Budget plan A (US\$120,000)

Activity	Planned Budget (US\$)			Note
	2014	2015	Total	
2 FPMs and 1 Expert Meeting	27,000	27,000	54,000	Annual FPM, EM in 2015
Website Maintenance	1,000	1,000	2,000	Lower service level
<Marine biodiversity>				
- Implementing assessment	12,000		12,000	
- Developing a report		2,000	2,000	
- 1 workshop		10,000	10,000	
<Eutrophication>				
- Assessment	12,000		12,000	
- 1 training workshop		4,000	4,000	Only 1 training workshop for capacity building
<Seagrass mapping>				
- Developing a manual	4,000		4,000	
- Purchasing images	4,000		4,000	
- Case studies		12,000	12,000	
Cooperation/Coordination	2,000	2,000	4,000	Current level
Total	62,000	58,000	120,000	

Budget plan B (US\$125,000)

Activity	Planned Budget (US\$)			Note
	2014	2015	Total	
2 FPMs and 1 Expert Meeting	27,000	27,000	54,000	Annual FPM, EM in 2015
Website Maintenance	1,500	1,500	3,000	Current level
<Marine biodiversity> - Implementing assessment - Developing a report - 1 workshop	12,000	2,000 10,000	24,000	
<Eutrophication> - Assessment - 2 training workshops	12,000	8,000	20,000	
<Seagrass mapping> - Developing a manual - Purchasing images - Case studies	4,000 4,000	12,000	20,000	
Cooperation/Coordination	2,000	2,000	4,000	Current level
Total	62,500	62,500	125,000	

Budget plan C (US\$147,000)

Activity	Planned Budget (US\$)			Note
	2014	2015	Total	
2 FPMs and 1 Expert Meeting	27,000	27,000	54,000	Annual FPM, EM in 2015
Website Maintenance	1,500	1,500	3,000	Current level
<Marine biodiversity> - Implementing assessment - Developing a report - 1 workshop	18,000	2,000 10,000	30,000	Increased topics and more experts involved
<Eutrophication> - Assessment - 2 training workshops	12,000	8,000	20,000	
<Seagrass mapping> - Developing a manual - Purchasing images - Case studies - 1 workshop	4,000 4,000	12,000 15,000	35,000	A workshop for enhancing discussion/collaboration among experts
Cooperation/Coordination	2,500	2,500	5,000	Enhanced Cooperation
Total	68,000	79,000	147,000	



**POTENTIAL
COLLABORATIVE AREAS
WITH OTHER RACS AND
PARTNER ORGANIZATIONS**

**NOWPAP CEARAC FPM11
11-12 September 2013**

PAST/CURRENT ACTIVITIES

➤ **Training course on remote sensing data analysis**

#	Partners	Date & Venue
1	IOC/WESTPAC Nagasaki University	Sep. 2007 Nagasaki, Japan
2	Korea Ocean Research & Development Institute (KORDI) Jeju National University	Nov. 2008 Jeju, Korea
3	PICES, IOC/WESTPAC Far Eastern Federal University	Oct. 2011 Vladivostok, Russia
4	PICES Ocean University of China	Oct. 2013 Qingdao, China

➤ **Workshop/Meeting by CEARAC (2013)**

- NOWPAP/NEASPEC Joint Workshop on Marine Biodiversity Conservation and Marine Protected Areas in the Northwest Pacific (13-14 Mar. Toyama)

Participants: experts and governmental officials in the member states, PICES, IOC/WESTPAC, HELCOM

- Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region (5-6 August, Toyama)

Participants: experts in the member states, PICES

➤ **Workshop/Meeting by NOWPAP partners and/or regional/international organizations (2012-13)**

Event	Organizer	Date & Venue
2012 ASLO Aquatic Science Meeting	Association for the Science of Limnology and Oceanography (ASLO)	July 2012 Shiga, Japan
Regional Workshop on Marine Invasive Species Problems in Northwest Pacific Region	DINRAC	October 2012, Qingdao, China
PICES 2012 Annual Meeting	PICES	October 2012 Hiroshima, Japan
15 th International Conference on Harmful Algae	International Society for the Study of Harmful Algae (ISSHA)	Oct-Nov. 2012, Changwon, Korea

Event	Organizer	Date & Venue
PICES 2013 Summer School on Ocean Observing Systems and Ecosystem Monitoring	PICES	August 2013 Oregon, U.S.A.
PICES 2013 Annual Meeting	PICES	October 2013 B.C., Canada

Coming collaboration with NOWPAP partner

PICES 2013 Annual Meeting

Workshop on economic impacts of harmful algal blooms on fisheries and aquaculture

CEARAC will introduce the situation of the NOWPAP member states based on the Integrated Report on HAB (2010)

CEARAC would like to ask all FPs to provide information on economic impacts not only on negative impact but also on positive impact.

POTENTIAL COLLABORATION

CEARAC's Activity	Relevant activities/groups in other organizations
Marine biodiversity	<ul style="list-style-type: none"> - DINRAC (Database) - PICES (WG28 - Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple) - IOC/WESTPAC (invasive species) - YSLME (MPAs, biodiversity assessment)
Eutrophication	<ul style="list-style-type: none"> - POMRAC (nutrient input from land) - IOC/WESTPAC (capacity building)
Seagrass mapping	<ul style="list-style-type: none"> - DINRAC (Database) - PICES (capacity building)
HAB	<ul style="list-style-type: none"> - PICES (S-HAB: Section on Ecology of Harmful Algal Blooms in the North Pacific)
RAP MALI	<ul style="list-style-type: none"> - DINRAC (Database) - MERRAC (Sea-based sources)

