

## **Report on CEARAC Activities for the 2018-2019 biennium**

### **1. Background**

While NOWPAP Regional Coordinating Unit (RCU) developed a new NOWPAP Medium-term Strategy (MTS) 2018-2023, CEARAC reconsidered its responsibility and future activities to align with themes in NOWPAP MTS. CEARAC is expected to contribute to NOWPAP MTS 2018-2023 in the following priority areas: 1) assess status of the marine and coastal environment, 2) prevent and reduce land- and sea-based pollution, and 3) conserve marine and coastal biodiversity.

At the 15<sup>th</sup> CEARAC Focal Points Meeting (FPM) in 2017, CEARAC Secretariat proposed two intersessional projects: development of the CEARAC Medium-term Strategy on marine biodiversity conservation (MTS) and development of a tool for mapping seagrass distribution in the NOWPAP region with some routine works such as organization of regular meetings and maintenance of the website.

Since NOWPAP RCU recommended developing two different budget lines, CEARAC Secretariat also introduced two optional activities (consideration of future direction of NOWPAP marine biodiversity activities and reconstruction of CEARAC websites and database by cloud computing technology) at the 15<sup>th</sup> FPM. The meeting discussed the proposed workplan thoroughly and approved to submit it, after some modification applied, to the 22<sup>nd</sup> NOWPAP Intergovernmental Meeting (IGM) held in December 2017, where NOWPAP workplan for 2018-2019 with higher budget allocation was approved.

Therefore, CEARAC Secretariat revised its workplan as introduced at the 15<sup>th</sup> FPM and explained it at the 16<sup>th</sup> CEARAC FPM held in May 2018. The meeting reviewed the revised workplan with the perspective of what could be done within two years and what outputs/outcomes could be made by planned activities. Then, when providing practical suggestions such as narrowing down tasks and changing the title of the activity in developing a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation (RAP BIO), the meeting strongly recommended cooperation and coordination with other RACs for successful implementation of CEARAC activities as well as NOWPAP. In particular, they advised that CEARAC Secretariat participate in other RACs' FPMs to explain the activity of a roadmap development for RAP BIO.

Coming to the end of the current biennium (2018-2019), CEARAC has completed some planned activities and some others are in the last stage of its implementation.

## 2. CEARAC activities for the 2018-2019 biennium

CEARAC activities for the 2018-2019 biennium are shown in Table 1 below.

**Table 1. Planned activities of CEARAC for the 2018-2019 biennium**

<p><b>Organization of meetings</b></p> <ul style="list-style-type: none"> <li>- Organizing 16<sup>th</sup> FPM (2018) and 17<sup>th</sup> FPM (2019)</li> <li>- Organizing 2<sup>nd</sup> Expert Meeting on Eutrophication Assessment in the NOWPAP region (2019)</li> </ul>
<p><b>Maintenance of Websites</b></p> <ul style="list-style-type: none"> <li>- Updating website contents regularly</li> <li>- Upgrading Marine Environmental Watch System</li> <li>- Reconstructing CEARAC websites using cloud computing technology</li> </ul>
<p><b>Specific projects</b></p> <p><b>Development of the CEARAC Medium-term Strategy on marine biodiversity conservation</b></p> <ul style="list-style-type: none"> <li>- Identifying potential topics for future activities and conducting feasibility assessments</li> <li>- Organizing marine biodiversity workshop/meeting</li> <li>- Developing CEARAC MTS</li> </ul>
<p><b>Development of a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation (RAP BIO)</b> (implemented under cooperation among RCU and all RACs)</p> <ul style="list-style-type: none"> <li>- Identifying issues of national/regional importance for marine BD conservation</li> <li>- Reviewing/assessing past NOWPAP activities on marine BD implemented by RACs</li> <li>- Identifying role of each RAC in addressing marine BD issues in the NOWPAP region</li> <li>- Preparing a draft roadmap for RAP BIO</li> <li>- Organizing a workshop</li> </ul>
<p><b>Development of a tool for mapping seagrass distribution in the NOWPAP region</b></p> <ul style="list-style-type: none"> <li>- Updating field data on seagrass distribution</li> <li>- Developing a cloud-based tool for mapping seagrass distribution with satellite images</li> <li>- Constructing a web-based service for mapping seagrass distribution</li> </ul>
<p><b>Cooperation and coordination with other RACs and regional/international organizations</b></p> <ul style="list-style-type: none"> <li>- Information-sharing by participation of meetings held by other RACs and Partners</li> <li>- Joint organization of events (e.g. meeting and workshop) with other RACs and Partners</li> </ul>
<p><b>Marine Litter Activities (RAP MALI)</b></p> <ul style="list-style-type: none"> <li>- Harmonizing/summarizing monitoring data submitted by the member states</li> <li>- Developing a regional overview of national efforts to address microplastics</li> <li>- Translating contents of the Northwest Regional Node into Japanese</li> <li>- Helping DINRAC transfer responsibility of the Northwest Regional Node (website)</li> </ul>

## 3. Major Outputs/outcomes of CEARAC activities for the 2018-2019 biennium

### 3.1 Organization of Meetings (Focal Points Meeting and Expert Meeting)

#### 3.1.1 Focal Points Meetings (FPM)

The 16<sup>th</sup> CEARAC FPM was held in Toyama, Japan on 10-11 May 2018. Following the adoption of NOWPAP workplan for the 2018-2019 biennium at the 22<sup>nd</sup> NOWPAP IGM in 2017 with the

increased budget, CEARAC Secretariat had revised its workplan at the beginning of 2018 and explained it at the meeting. After thorough discussion on the revised workplan, the meeting again advised some modification of the workplan for smooth implementation of activities. With participation of other RACs and NOWPAP partner organizations, cooperation and coordination of activities between CEARAC and these organizations were also considered.

[\(http://cearac.nowpap.org/meeting-report/the-sixteenth-nowpap-cearac-focal-points-meeting/\)](http://cearac.nowpap.org/meeting-report/the-sixteenth-nowpap-cearac-focal-points-meeting/)

### **3.1.2 Expert Meeting**

The second CEARAC Expert Meeting on Eutrophication Assessment in the NOWPAP Region was held on 22 March 2019 in Vladivostok, Russia. As index of coastal eutrophication became one of the sub Indicators of the Sustainable Development Goal (SDG) 14.1, the meeting participants recognized the importance of continuing eutrophication assessment in the NOWPAP region. CEARAC Secretariat introduced a new assessment tool at the meeting: NOWPAP Eutrophication Assessment Tool (NEAT) which uses concentration level and trend of satellite-based chlorophyll-a concentration to detect potential eutrophic zones in the NOWPAP region (<https://cloudgis.nowpap3.go.jp/news-title1/>). The meeting participants encouraged CEARAC to further develop the NEAT with new ocean color sensors by inter calibration of sensors and cross validation with in situ Chl-a. NEAT was also introduced in a news page of UNEP website. (<https://www.unenvironment.org/nowpap/news/press-release/neat%E2%80%94satellite-based-technique-keep-eye-growing-eutrophication-threat-oceans>)

### **3.2 Maintenance of Websites**

To reduce cost in maintaining websites related to CEARAC activities. CEARAC has been preparing to migrate existing websites to cloud based services that provide better services at a reasonable cost. To start off, CEARAC has renewed website of the Marine Environmental Watch System by introducing cloud based services. This renewal was carried out after removing an antenna and associated hardware devices installed at the Toyama Prefectural Environmental Science Research Center (TESC), which have been used for downloading and processing satellite data for CEARAC activities since 2002. CEARAC is planning to transfer existing data archive to a cloud based storage to reduce operation cost of the Marine Environment Watch System. CEARAC also constructed a regular data processing mechanism to make a time series data set of regional tuned satellite derived chlorophyll-a concentration for the NOWPAP region.

Meanwhile, CEARAC continues periodical update of data and information on its webpages.

CEARAC's annual newsletter is one major tool to disseminate updated information of CEARAC to wide range of readers. It is published in English and Japanese, so even local visitors of CEARAC

websites who are not good at commanding English can familiarize with on-going activities of CEARAC. (<http://cearac.nowpap.org/newsletter/>)

### **3.3 Development of the CEARAC Medium-term Strategy on marine biodiversity conservation (MTS)**

At the 16<sup>th</sup> FPM, six potential topics were selected for future CEARAC activities on marine biodiversity conservation: assessment of marine biodiversity; harmful invasive species; specific migration species; conservation of biological habitat (tidal flat, salt marsh, seagrass bed); plankton species; and e-DNA. Then, CEARAC asked nominated experts in the member states to conduct feasibility assessments on these topics.

Unfortunately, a report has not submitted from the Korean expert as of July 2019 and it is difficult to discuss the priority of potential topics at the workshop. Therefore, CEARAC would like to propose to change its workplan as follows:

- The draft of CEARAC MTS is prepared by CEARAC Secretariat based on submitted feasibility assessment reports.
- The draft CEARAC MTS is reviewed by CEARAC FPs and the experts, and it would be approved in principle at the 17<sup>th</sup> CEARAC FPM.
- Based on the approved CEARAC MTS, details of future workplan will be discussed at the workshop which will be held in late 2019.

### **3.4 Development of a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation (RAP BIO)**

While discussing other RACs and their FPs, CEARAC Secretariat with the support of NOWPAP RCU revised the workplan of this activity as follows:

- One international consultant leads this activity with support by four national experts. For the selection of the international consultant, Dr. David Coates was appointed. The nominated experts from the member states have not been finalized yet (as of July 2019). When all of the experts are decided, CEARAC Secretariat will contract with them and finally this project will be started.
- The consultant and the experts will identify issues of national/regional importance for marine biodiversity conservation, review past activities of all RACs on marine biodiversity, consider roles of each RAC on marine biodiversity conservation, and develop a draft roadmap.
- A workshop will be organized with the consultant/experts, researchers of marine biodiversity and policy-makers of the NOWPAP members, and RCU and RACs.

### **3.5 Development of a tool for mapping seagrass distribution in the NOWPAP region**

Focusing on the importance of seagrass beds as essential habitat for marine coastal species, CEARAC has worked on mapping its distribution in selected sea areas in the NOWPAP region for

the past biennia. Now, for understanding its distribution accurately and in a large scale, CEARAC has been developing a tool for mapping seagrass distribution using power of cloud computing. It is also essential to use the same tool applicable in all of the member states. Also, the developed tool should be easily used especially when expecting support by the public (e.g. providing on-site information of seagrass). Therefore, CEARAC has worked on developing a cloud-based tool for mapping seagrass using Google Earth Engine (GEE) in cooperation with Remote Sensing Technology Center of Japan RESTEC). Since GEE is not applicable in China, CEARAC has been considering building a similar tool with a different cloud-based technology using such as Amazon Web Service (AWS).

### **3.6 Cooperation and coordination with other RACs and regional/international organizations**

Staff of CEARAC Secretariat joined other RACs FPMs in 2018 to explain one of CEARAC activities: developing a roadmap for Regional Action Plan for Marine and Coastal Biodiversity Conservation (RAP BIO) and asked for their cooperation with the activity. This action helped CEARAC staff meets FPs of other RACs in person, which can help smoother and more direct communication and cooperation with them in the future.

NOWPAP POMRAC organized a regional workshop: development of regional targets of NOWPAP Ecological Quality Objectives (EcoQOs) on 20-21 March 2019 in Vladivostok, Russia. As one of NOWPAP EcoQOs is on eutrophication and CEARAC has worked on eutrophication for several biennia, CEARAC staff joined the workshop and gave a presentation on our activities. CEARAC then held an expert meeting on eutrophication assessment on the following day at Vladivostok, and one of POMRAC FPs joined the meeting and gave a presentation vice-versa. These events helped all of the workshop/meeting participants understand between two NOWPAP RACs.

UN General Assembly in September 2015 agreed on 17 Sustainable Development Goals (SDGs) and 169 targets as the framework for the 2030 Agenda for Sustainable Development, in which eutrophication is decided as a parameter together with plastic debris in SDG 14.1.1. CEARAC staff participated in the Expert Group meeting on SDG 14.1, Coastal Eutrophication and Marine Pollution (12-13 September 2018, Paris, France) and the First Operational Satellite Oceanography Symposium (17-20 June 2019 in Maryland, U.S.A.) to introduce CEARAC eutrophication assessment activity based on the NEAT method.

Staff of CEARAC Secretariat participated in the 2018 PICES Annual Meeting held in Yokohama, Japan. He participated in SG-MMP Business Meeting, AP-NIS Business Meeting, S-HAB Business Meeting and MEQ Business Meeting in order to discuss collaboration between NOWPAP and PICES. Organization of workshops on marine microplastic and HAB jointly was proposed and approved by Governing Council of PICES.

NOWPAP was invited to the 3<sup>rd</sup> Science Conference of YSLME held in Qingdao, China. Staff of CEARAC Secretariat participated in the conference and shared NOWPAP biodiversity activities. During the meeting, many studies on tidal flats in the Yellow Sea were introduced, and such information has been used for developing CEARAC MTS.

### **3.7 Activities on Marine Litter (RAP MALI)**

CEARAC with support of NPEC, host organization of CEARAC, developed the Northwest Pacific Regional Node of the Global Partnership on Marine Litter in 2014. At the 23<sup>rd</sup> NOWPAP IGM (2018), the member states agreed that the Regional Node is operated by DINRAC. Based on this agreement, CEARAC has provided contents of the Regional Node and related information to DINRAC for developing a new Regional Node. After starting operation of the new Regional Node, CEARAC will translate the text into Japanese and provide it for operation of Japanese webpages. CEARAC asked ML FPs to provide data on National Monitoring of marine litter. So far, the member states have provided data as new as 2016 and it was shared with DINRAC. In addition, CEARAC has worked on collecting information on microplastics in terms of monitoring and countermeasures taken in the NOWPAP member states. CEARAC Secretariat summarized information based on the past presentation from the member states and relevant experts. CEARAC will ask ML FPs/experts to review it and revise/add information. The summary report will be published in a digital format by the end of 2019.

### **4. Budget and Expenditure for CEARAC activities for the 2018-2019 biennium**

Based on the decision of the 22<sup>nd</sup> NOWPAP IGM held in December 2017, CEARAC has been allocated 194,250 US Dollars (185,000 dollars for its activities and 9,250 dollars for marine litter activities) for the 2018-2019 biennium. Current figure of its expenditure is shown in Table 2. While considering the progress of each activity, CEARAC has revised its workplan and budget in 2019. However the total budget in each activity is same as the one shown in the 16<sup>th</sup> CEARAC FPM in 2018.

**Table 2 Revised Workplan and Budget for CEARAC Activities  
for the 2018-2019 biennium (Total budget: US\$185,000)**

Activity	Budget (USD)		Expenditure (USD) ( as of Aug.2019)		
	breakdown	total	item	Spent Amount	Unspent Amount
<b>Organization of meetings</b> - FPM16(2018) / FPM17(2019) - Expert MT on eutrophication assessment (2019)		54,000	FPM16 (2018) FPM17 (2019) Expert MT (2019)	21,023 9,792	23,185
<b>Maintenance of Websites</b> - Updating web contents - Upgrading Marine Environment Watch system - Preparing for cloud computing service	12,000 In-kind 15,000	27,000	Contents update Watch system upgrade Cloud service prep.	In-kind 8,046	12,000 (by end 2019) 6,954 (by end 2019)
<b>Development of CEARAC MTS on Marine BD</b> - Identifying potential topics / conducting feasibility study - Organizing a workshop - Developing CEARAC MTS	13,000 15,000 2,000	30,000	Feasibility assess Workshop MTS (incl. proof-reading)		9,000 (3,000/ea) (by Q3 2019) 18,000 (by Nov. 2019) 3,000 (by end 2019)
<b>Development of a roadmap for RAP BIO*</b> - Reviewing past NOWPAP activities on marine BD - Organizing a workshop	10,000 20,000	30,000	Past activity review Workshop		10,000 (2,500/ea) 20,000 (fall 2019)
<b>Development of a tool for mapping seagrass distribution*</b> - Updating field data of seagrass (by NPEC) - Constructing web-based service	In-kind 40,000	40,000	Field data update Web-based service	In-kind	40,000 (by end 2019)
<b>Collaboration/coordination</b>		4,000		767	3,233
<b>Sub-total</b>		<b>185,000</b>		<b>39,628</b>	<b>145,372</b>

\*Workplans of these two activities have been revised since the 16th CEARAC FPM (May 2018).

The revision was proposed to FPs by CEARAC Secretariat and approved by correspondence.

**Table 3 Workplan and Budget for CEARAC Marine Litter Activities**

Activity	Budget (USD)		Expenditure (USD) ( as of Aug.2019)		
	breakdown	total	item	Spent Amount	Unspent Amount
<b>Marine litter (RAP MALI)</b> - Harmonizing monitoring data - Developing a regional overview on national efforts against microplastics - Translating marine litter info. into Japanese	In-kind 6,000  3,250	9,250	Regional overview Info. in Japanese	In-kind	6,000 (2,000/ea) (in Oct.)  3,250 (unknown)
<b>Grand Total</b>		<b>9,250</b>		<b>0</b>	<b>9,250</b>