

1 Background

NOWPAP CEARAC developed Procedures for the assessment of eutrophication status including evaluation of land-based sources of nutrients for the NOWPAP region (the NOWPAP Common Procedure) in June 2009 with the help of nominated experts in the NOWPAP member states. Then, the Procedure was used to assess the eutrophication status in the selected sea areas in the member states (Yangtze River Estuary and adjacent area in China, Northwest Kyushu sea area and Toyama Bay in Japan, Jinhae Bay in Korea, and Peter the Great Bay in Russia) in 2010-2011. Then, in 2011, the results of the assessments were combined and published as the Integrated Report on Eutrophication Assessment in Selected Sea Areas in the NOWPAP Region: Evaluation of the NOWPAP Common Procedure.

Realizing the technical problems of the NOWPAP Common Procedure in its application to the selected sea areas and assessment of the eutrophication status of each sea area, the NOWPAP Common Procedure is being refined and re-applied to selected sea areas in the NOWPAP region (Jiaozhou Bay in China is a newly selected area; the areas in Japan, Korea and Russia are the same as the previous assessment.). At the same time, literature review on negative impact of eutrophication, ecological modeling and availability of monitoring data has been conducted in comparison with the obtained assessment results. After reviewing the assessment results, the refined NOWPAP Common Procedure will be finalized by the end of 2013, and an overview of the eutrophication status in the NOWPAP region will be published.

In the draft version of the refined NOWPAP Common Procedure (UNEP/NOWPAP/CEARAC/FPM 11/Ref4), there are two steps in assessing the eutrophication status: Screening Procedure (initial diagnosis) to detect symptoms of eutrophication with the minimum required parameters; and Comprehensive Procedure (second diagnosis) to assess status and possible causes of eutrophication using the existing four categories (Degree of nutrient enrichment, Direct effects of nutrient enrichment, indirect effects of nutrient enrichment, and other possible effects of nutrient enrichment). As all of the currently selected sea areas have shown symptoms of eutrophication in the past and/or at present, Comprehensive Procedure is being applied to each selected sea area.

Although it is expected that the eutrophication status of entire NOWPAP sea area is assessed by each member state in the long run, autonomous application of the refined NOWPAP Common Procedure may not be fully realized due to lack of data and/or knowledge/techniques of coastal managers. Therefore, CEARAC proposes a new project for the 2014-15 biennium to apply the Screening Procedure to the entire NOWPAP sea area and identify potential eutrophic zones requiring the application of the NOWPAP Comprehensive Procedure. This project also includes training workshops to build/improve capacity of coastal managers to encourage autonomous use of the NOWPAP Common Procedure by the member states. The proposal was reviewed at the

Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region held on 5-6 August 2013, and elaborated based on suggestions in terms of parameters for screening.

2 Objective

Objective of this activity is to encourage autonomous use of the NOWPAP Common Procedure by the member states by (i) 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; and (ii) providing coastal managers with training on the refined NOWPAP Common Procedure.

3 Tasks

3.1 Trial application of the Screening Procedure of the NOWPAP Common Procedure to the entire NOWPAP sea area

Three parameters will be used in the Screening Procedure: nutrient inputs and their residence time, occurrence of red tides, and chlorophyll-a concentration to identify potential eutrophic zones in the NOWPAP sea area .

3.1.1 Collection and analysis of data on nutrient inputs and their residence time

Experts in each member state selected by CEARAC Focal Points (FPs) will collect data on nutrient inputs and their residence time in enclosed sea areas in each country. Based on the analysis of such data, enclosed sea areas susceptible to nutrient inputs will be listed in each country. CEARAC will develop a map on sea areas susceptible to nutrient inputs in the entire NOWPAP sea area.

3.1.2 Collection of data and mapping of occurrences of red tides

Experts in each member state selected by CEARAC FPs will collect information on occurrences of red tides in their respective sea areas, following the information collection rules shown in the HAB Reference Database in the CEARAC website. CEARAC will develop a map on the occurrence of red tide events in the entire NOWPAP sea area.

3.1.3 Development of satellite map of chlorophyll-a concentration

Following the Screening Procedure, CEARAC will develop a map on chlorophyll-a concentration based on the ocean color satellite data and post the map on Marine Environmental Watch Project Homepage in the CEARAC website.

3.1.4 Mapping potential eutrophic zones

With the trial application of the Screening Procedure, CEARAC will develop a map on potential eutrophic zones by overlaying the three maps developed through 3.1.1-3.1.3. The identified potential eutrophic zones will also be verified using existing literatures, which clarify effectiveness and limitation of the Screening Procedure.

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

A series of in-country training workshops will be organized mainly targeting coastal managers (e.g. local government officers) responsible for the identified eutrophic zones. The workshop will be one or two- day-long and will introduce the Comprehensive Procedure of the refined NOWPAP Common Procedure and effective countermeasures against eutrophication using the local language of host country. CEARAC will prepare the program and training materials of the workshop in the language of host country. Host organizations (e.g. local governments, academic/training institutions) of the workshop will be publicly advertised with the help of the experts and CEARAC FPs, and the submitted proposals will be reviewed and approved by CEARAC FPs. The sea areas previous or currently involved in the NOWPAP eutrophication activities may be the potential candidate venues of the workshop. It is planned to conduct workshops in one or two places in the 2014-2015 biennium.

The number of places for holding the workshop depends on budget allocation. It is expected that Budget Option B (USD 125, 000 for entire CEARAC Activity) could support two places while Budget Option A (USD 120,000 for entire CEARAC Activity) could support only one place.

4 Expected outcomes

By applying the Screening Procedure of the refined NOWPAP Common Procedure to the entire NOWPAP sea area, it is possible that potential eutrophic zones are identified and visualized on a map.

Combined with the training for coastal managers, this activity will contribute to the awareness raising on eutrophication status, enhanced application of the NOWPAP Common Procedure and countermeasures against eutrophication in the NOWPAP member states aiming at addressing most of the eutrophic zones in the long run.

5 Schedule

The time line of tasks in this activity is shown as follows.

Time	Action	Main body
Aug.	Expert Meeting - Review of the draft proposal	CEARAC Secretariat and Experts of NOWPAP member states
Sep.	CEARAC FPM11 - Review of the draft proposal	CEARAC Secretariat and FPs
Dec.	NOWPAP IGM18 - Review/approval of CEARAC workplan and budget for 2014-2015	representatives of member states
2014 Q2	CEARAC FPM12 - Approval of the implementation plan	CEARAC Secretariat and CEARAC FPs
Q2/Q3	Trial application of the Screening Procedure in the refined NOWPAP Common Procedure	Experts of NOWPAP member states and CEARAC
Q4	Review of the results of application of the Screening Procedure	CEARAC and Consultant
2015 Q1	Preparation of a training workshop program and materials in languages of the NOWPAP member states	CEARAC and Consultant
Q2	Advertisement of call for proposals and review of submitted proposals on training workshops	Experts of NOWPAP member states and CEARAC FPs
Q3/Q4	Training workshops on eutrophication assessment and countermeasures for coastal managers (two places)	Experts of NOWPAP member states, CEARAC and FPs

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 training workshop 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)

(Note) Budget amounts in parentheses represent a Budget A case.