1. Background

In line with the approved CEARAC workplan at the 7th NOWPAP CEARAC FPM (14-15 September 2009, Toyama, Japan), CEARAC has conducted case studies on the eutrophication assessment to evaluate the suitability of the NOWPAP Common Procedure for assessing the eutrophication status including evaluation of the eutrophication status for the NOWPAP region (UNEP/NOWPAP/CEARAC/FPM 7/Ref2) (the NOWPAP Common Procedure). Yangtze River Estuary and adjacent area in China, Northwest Kyushu sea area and Toyama Bay, Japan, Jinhae Bay in Korea, Peter the Great Bay in Russia were selected as areas for the case studies.

The results of the eutrophication assessment in each selected sea area were reported at the Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region organized on 4-5 August 2011 in Toyama. Finally, the Integrated Report on Eutrophication Assessment in Selected Sea Areas in the NOWPAP Region: Evaluation of the NOWPAP Common Procedure was published in March 2012.

Realizing technical problems of the procedure, the participants of the Expert Meeting suggested implementing a refinement work of the NOWPAP Common Procedure to improve its suitability towards the assessment of the eutrophication status of the whole NOWPAP region. The workplan and budget of CEARC activities for the 2012-2013 biennium including the refinement activity of the NOWPAP Common Procedure for eutrophication assessment towards the assessment of the whole NOWPAP region was approved at the 16th NOWPAP IGM (20-22 December 2011, Beijing, China).

This document explains the workplan to refine the NOWPAP Common Procedure and to continue the assessment of the eutrophication status based on the refined procedure.

2. Objective

Objective of this activity is 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 and to develop an overview of the eutrophication status in the NOWPAP region.

3. Main tasks

Each NOWPAP member state will be required to cooperate with CEARAC in the refinement work of the NOWPAP Common Procedure and to apply the refined procedure to assess the eutrophication status of the existing or newly selected sea areas. Review of

literatures related to eutrophication, ecological modeling and availability of monitoring data, which have been published and/or released in the NOWPAP member states, will also be done by the nominated experts.

3.1 Refinement of the Common Procedures

Based on the lessons learned from the case studies on the eutrophication assessment in the selected sea areas of the NOWPAP member states in the 2010-2011 biennium, CEARAC Secretariat will prepare a draft refined NOWPAP Common Procedure (1st draft of refined NOWPAP Common Procedure is attached as Annex of this document) through correspondences with the experts who conducted the eutrophication assessment in each selected sea area. The proposed refinement work includes harmonization of spatial and temporal scale for assessment parameters among the NOWPAP member states and unification of rules to classify the eutrophication status and trend. A draft revision of the NOWPAP Common Procedure will be circulated among stakeholders (relevant ministries, institutions and organizations) in the NOWPAP member states via CEARAC FPs. Upon adoption of the refined NOWPAP Common Procedure by the NOWPAP member states, the nominated experts by CEARAC FPs in each NOWPAP member state will apply the refined procedure to existing or newly selected sea areas and update each case study report prepared in 2011.

3.2 Literature review on eutrophication assessment and ecological modeling

In order to contribute to developing an overview on the assessment of the eutrophication status of the whole NOWPAP region, the nominated experts will review literatures on negative impact of eutrophication, ecological modeling and availability of monitoring data, which have been published and/or released in each NOWPAP member state. Results of the review will be included in each case study report on the eutrophication assessment in comparison with the obtained eutrophication assessment results with the refined NOWPAP Common Procedure.

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

Based on the case study reports in each selected sea prepared by the above 3.1 and 3.2, CEARAC Secretariat will develop the regional overview of the eutrophication status for the NOWPAP region with the help of a hired consultant. If necessary, review of literatures outside of the NOWPAP region will be done by the consultant.

4. Expected outcomes

The obtained assessment results by the refined NOWPAP Common Procedure and the results of literature reviews in each NOWPAP member state will be harmonized and integrated in the regional overview of the eutrophication assessment for the NOWPAP region. The developed Regional Overview of the Eutrophication Assessment for the NOWPAP region will be shared among coastal managers in the NOWPAP member states and expected to foster a common understanding on the status of eutrophication in the NOWPAP region.

The eutrophication status of each case study area will also be summarized and posted on the CEARAC website to be available for the public.

5. Potential partners

In order to best utilize the obtained assessment results for the proper management of the marine and coastal environments, it is necessary to share the results with groups or organizations that are working on the coastal area management. CEARAC will form a cooperative relationship with relevant organizations within and without the NOWPAP framework, such as NOWPAP RACs, HELCOM Secretariat, International EMECS Center, local governments, and others.

Hence, as POMRAC has been implementing activities on the integrated coastal and river basin management in the NOWPAP framework, CEARAC will provide information referring to the requirements by POMRAC.

6. Schedule

The proposed schedule is as follows.

Time		Actions	Main body
2012	April 10th CERAC FPM	• Approval of the workplan and budget by CEARAC FPM • Review of the 1st draft of the refined the NOWPAP Common Procedure (Annex)	CEARAC and FPs
	Q2 to Q3	• Refinement of the NOWPAP Common Procedure by CEARAC and national experts	CEARAC and National experts
	Q3	• Review of the refined NOWPAP Common Procedure by stakeholders in NOWPAP member states	Relevant ministries, institutions and organizations
	Q4	• Application of the refined NOWPAP Common Procedure in existing or newly selected sea areas	National experts and CEARAC
2013	Q1	• Preparation of case study reports including review of literatures in each NOWPAP member state	National experts and CEARAC
	Q2-Q3	• Preparation of the regional overview on eutrophication assessment •	CEARAC and consultant
	Q3 CEARAC Expert Meeting	• Review of of the 1st draft of the regional overview by national experts	National Experts and CEARC
	Q3 (11th CEARAC FPM)	• Review of the draft regional overview on the eutrophication assessment by CEARAC FPM	CEARAC and FPs
	Q3	• Review of the draft regional overview on the eutrophication assessment	CEARAC FPs National FPs
	Q4	• Publication of the regional overview on the eutrophication assessment • Preparation of website contents on CEARAC website	CEARAC

7. Budget

Contract	Timing	Output	To be completed	Counterpart	Budget (US$)
Preparation of a case study report on the eutrophication status with the refined NOWPAP Common Procedure and review of literatures	2012 Q2	Case study report on the eutrophication assessment in each NOWPAP member state	2013 Q1	Expert or organization in China	4,000
				Consultant in Japan	4,000
				Expert or organization in Korea	4,000
				Expert or organization in Russia	4,000
Preparation of the regional overview on the eutrophication status in the NOWPAP region	2013 Q2	Regional overview on the eutrophication status in the NOWPAP region	2013 Q4	CEARAC and consultant	4,000
Total					20,000

1st draft of refined procedures for assessment of eutrophication status including evaluation of land-based sources of nutrients for the NOWPAP region

－Contents－

1. Introduction

Eutrophication is the phenomenon of aquatic ecosystem enrichment due to increased nutrient loading. Eutrophication is often caused by human activities, such as inputs of fertilizers from agriculture farming, feed for aquaculture, untreated and/or treated sewage as well as industrial wastewater. Eutrophication causes the deterioration of the coastal environment and typically leads to the formation of harmful algal (phytoplankton) blooms which may subsequently induce fish kill, further ecosystem damage and, at times, are directly or indirectly associated with human health problems. Eutrophication degrades the water quality by decreasing oxygen amount and often light penetration through accelerating excessive production of organic matter in the coastal waters.

In the Northwest Pacific region, coastal areas of China, Japan and Korea are densely populated and eutrophication is often perceived as a potential threat for coastal environment, although eutrophication is rare in Russian waters. Ability to monitor their coastal systems is necessary to manage and sustain healthy coastal environments. However, the availability of continuous and synoptic water quality data, particularly in estuaries and bays is lacking, and it is difficult to characterize the response of water quality to human and natural impacts. Furthermore due to increases in agricultural and industrial activity as well as the possible changes of coastal run-off in this region, there has been an increase in the need for effective monitoring methods on the change of water quality.

Thus, Northwest Pacific Action Plan (NOWPAP) Working Group 3 (WG3) and Working Group 4 (WG4) have decided to use experience of the European countries and develop “Procedures for assessment of eutrophication status including evaluation of land-based sources of nutrients for the NOWPAP region (Procedures)”. It is hoped that the obtained assessments will provide arguments to limit or, if possible, to reduce anthropogenic change of the coastal ecosystem.

1-1. Background

1.1. Development of the Procedures was proposed and approved at the 5th CEARAC (Special Monitoring and Coastal Environmental Assessment Regional Activity Center) Focal Point Meeting (FPM) held in Toyama on September 18-19, 2007.

1.2. As part of the development processes of the draft Procedures, NPEC (Northwest Pacific Region Environmental Cooperation Center) has implemented a case study in Toyama Bay (Toyama Bay case study), by referring to the ‘Common Procedure for the Identification of the Eutrophication Status of the OSPAR Maritime Area’. An interim progress of the Toyama Bay case study was presented at the 5th CEARAC FPM and First Coastal Environment Assessment Workshop held in Toyama on March 6-8, 2008.

1-2. Objectives of the Procedures

1.3. The objectives of the Procedures are to enable each NOWPAP member state to assess the status and impacts of eutrophication in their respective sea areas, by using information obtained through existing monitoring activities. The assessment results could hopefully then be utilized by each NOWPAP member state for consideration and development of monitoring systems and countermeasures against eutrophication. The content of the Procedures will be continuously revised and improved by reflecting the feedbacks from each NOWPAP member state gains through the implementation of the Procedures. Figure 1 schematically shows the concept of the Procedures.

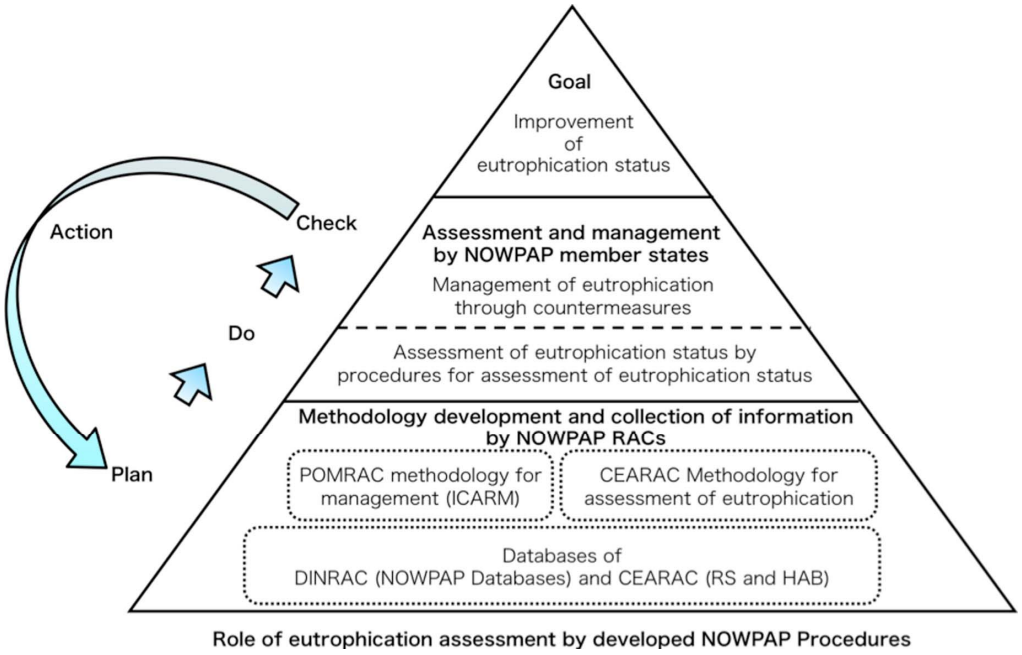

Figure 1 Concept of the Procedures.

RACs are regional activity centers of NOWPAP. CEARAC: Special Monitoring and Coastal Environment Assessment Regional Activity Centre, DINRAC: Data and Information Network Regional Activity Centre, POMRAC: Pollution Monitoring Regional Activity Centre.

1-3. Characteristics of the Procedures

1.4. The Procedures was developed based on the following principles:

i) It should be adaptable to various environmental conditions in different types of areas in the NOWPAP region.
ii) If applicable, new monitoring techniques such as remote sensing (e.g. physical and biological data) should be used in the assessment procedure.
iii) Eutrophication status is assessed through a holistic approach by integrating the following eutrophication aspects: degree of nutrient enrichment, direct/indirect effects of nutrient enrichment and other possible effects of nutrient enrichment.

1-4. Overall structure

1.5. The assessment procedure is broadly separated into six parts, namely i) scope of assessment, ii) data processing, iii) setting of assessment criteria, iv) assessment process and results, v) review of results and vi) conclusion/recommendations. In the 'scope of assessment' part, assessment area and parameters are selected from predetermined lists and period of observations. In the 'data processing' part, raw data are processed into data sets for the assessment. In the 'setting of assessment criteria' part, assessment criteria are set. In the 'assessment process and results' part, eutrophication status of the assessment area is identified. In the 'review of results' part, the assessment results are reviewed and verified by traditional and new monitoring techniques, such as remote sensing from various satellites/sensors, as well as they are compared with the results of modeling. In the 'conclusion/recommendations' part, future measures and actions are suggested with estimates of costs and benefits and future issues are identified on the basis of the assessment results. Figure 2 shows the implementation flow of the Procedures.

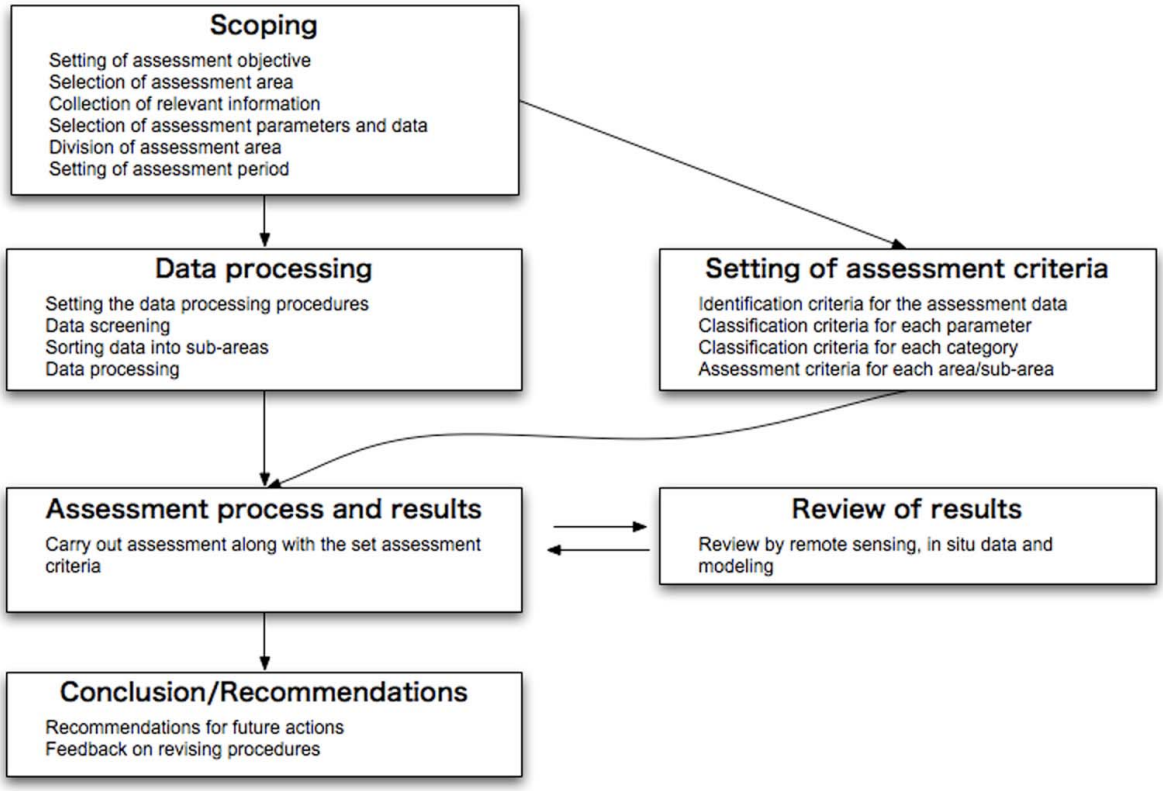

Figure 2 Basic flow of the Procedures.

2. Scope of assessment

2-1. Setting of assessment objective

2.1. State objectives of the assessment.

2.2. In order to facilitate the understanding of the assessment results, clarify the preconditions and limitations involved in the assessment.

2.3. State any scientific uncertainties that users of the assessment results should take note of, such as:

i) The assessment results may not be applicable for use in environmental impact assessment.

ii) The assessment results may become less reliable/valid when scientific data/information are updated.

iii) The assessment results may have low degree of confidence due to insufficient data.

2-2. Selection of assessment area

2.4. Select an assessment area that can be considered as a single sea area (e.g. geographic unit).

2.5. An assessment area should be an area for which there are ongoing environmental monitoring and assessment programs and where eutrophication was earlier observed or amount of nutrients increases.

2-3. Collection of relevant information

2.6. Collect information on the assessment area that is necessary and relevant to eutrophication assessment such as: i) environmental monitoring/survey data* (e.g. water quality, nutrient load, red tide, marine flora/fauna, shellfish poisoning, ocean remote sensing); ii) pollutant sources (e.g. municipal, industrial, agricultural, marine aquaculture, atmospheric deposition); iii) supplementary information (e.g. oceanography, meteorology, catchment area population, wastewater management, fishery status, coastal recreation). The list of relevant information will be updated as further experiences are gained through the implementation of the Procedures.

*: Information on methodology (e.g. method of field measurement and chemical analysis) should also be collected to confirm data reliability.

2.7. Collect eutrophication related information/data from organizations such as:

i) Organizations that monitor water quality for environmental conservation purposes
ii) Organizations that observe ocean with satellite remote sensing
iii) Organizations that monitor harmful algal blooms for protection of fishery resources
iv) Organizations that monitor shellfish poisoning for food safety
v) Organizations that have supporting environmental information (e.g. oceanographic (physical, biogeochemical etc.) data, meteorological data)

2.8. Organize the collected environmental monitoring/survey information into a tabular format. Table 1 is an example of a tabular format.

Table 1 An example of tabular format for organizing collected environmental monitoring/survey information.

Survey area	Governing organization	Survey title	Aim	Survey period	Main survey parameters	Survey frequency	No. of survey points

2.9. Select the most appropriate environmental monitoring/survey program for the assessment process in section 5.

2.10. The following environmental monitoring/survey programs should not be used for the assessment procedure:

i) Monitoring/surveys conducted at very limited frequency
ii) Programs that monitor/survey environmental parameters that are not directly related to eutrophication
iii) Monitoring/surveys that are not conducted at regular locations and frequency
iv) Monitoring/surveys that are not conducted for monitoring water quality and aquatic organisms
v) Monitoring/surveys that employ uncommon analytical methods

2-4. Selection of assessment parameters and data

2-4-1. Categorization of monitored/surveyed parameters

2.11. From the selected environmental monitoring/survey programs, categorize all eutrophication related parameters that are monitored/surveyed within the assessment area into one of the following 4 assessment categories:

i) Category I Parameters that indicate degree of nutrient enrichment
ii) Category II Parameters that indicate direct effects of nutrient enrichment
iii) Category III Parameters that indicate indirect effects of nutrient enrichment
iv) Category IV Parameters that indicate other possible effects of nutrient enrichment

2-4-2. Selection of assessment parameters of each assessment category

2.12. After the categorization process, select the assessment parameters that are applicable for the assessment procedure on the basis of their data reliability and continuity (e.g. data collected at fixed locations and at regular frequencies). The selected assessment parameters should also have established assessment methods.

2.13. In principle, all surveyed/monitored parameters related to eutrophication should be selected for the assessment procedure. If certain parameters are to be excluded from the assessment procedures, the reasons must be stated.

2.14. Although the final selection of the assessment parameter is subject to the decision of each member state, the use of the following parameters shown in table 2 are highly recommended. The appropriateness of the selected assessment parameters should be reevaluated as further experiences are gained through the implementation of the Procedures.

Table 2 Recommended set of assessment parameters ~~in the Toyama Bay case study~~

Category		Assessment parameter
I	Degree of nutrient enrichment	Riverine input (T-N, T-P)
		Input of industrial waste water
		Total nitrogen/Total phosphorus (T-N, T-P)
		Winter DIN/DIP concentration
		Winter N/P ratio (DIN/DIP)
II	Direct effects of nutrient enrichment	Chlorophyll-a concentration (field data)
		Chlorophyll-a concentration (remote sensing data)
		~~Ratio of area with high chlorophyll a concentration (remote sensing data) to the total area~~
		Red-tide events (diatom species)
III	Indirect effects of nutrient enrichment	Dissolved oxygen (DO) at bottom layer
		Abnormal fish kill incidents
		Chemical oxygen demand (COD)

IV	Other possible effects of nutrient enrichment	Red-tide events (*Noctiluca* sp.)
		Shellfish poisoning incidents

2-4-3. Setting of assessment value

2.15. In order to understand the inter-annual trends of eutrophication, assessment should be basically conducted with annual data (e.g. annual mean, annual max., annual number of events). However, other time scales (e.g. seasonal mean, raw value) may be used if it is considered more appropriate. It is recommended to analyze raw data carefully first to make reasonable statistical analysis. Descriptions of changes of sampling and analytical methods, such as sampling number, sampling time and location, preservation, and measurement procedure, is necessary for reasonable interpretation of data.

2.16. Set the assessment values*.

*Assessment value: The type of data (e.g. annual mean, annual max., annual number of events, seasonal mean, seasonal max.) that will be used for the assessment

2-4-4. Selection of monitoring/survey data for the assessment

2.17. Select the monitoring/survey data to be applied for each assessment parameter.

2-5. Division of assessment area into sub-areas

2.18. If it is necessary to understand and assess the causes and direct/indirect effects of eutrophication at more localized scales, the assessment area may be divided into sub-areas.

2.19. When dividing the assessment area into sub-areas, factors such as location of riverine input, monitoring locations, fishery activities, underwater topography, salinity distribution, ocean currents and red-tide events should be considered. Information derived by remote sensing techniques should also be taking into account.

> Preliminary eutrophication assessment by remote sensing techniques can be used to detect potential problem area at eutrophication risk.

2-6. Setting of assessment period

2.20. ~~Set the assessment period in accordance with the assessment objectives and availability of reliable data.~~ Recent 10 years should be set as the assessment period.

> - Unifying temporal coverage for easier comparison of the assessment result across the entire NOWPAP region.
> - 10 is the minimum number required for detecting trend by the Mann-Kendall test.

3. Data processing

3-1. Data processing method

3.1. For each assessment parameter, determine a methodology to process monitoring/survey data into the selected assessment values (e.g. annual mean).

3-2. Data screening

3.2. Within the selected monitoring/survey data, exclude data that are not suitable for the assessment.

3.3. If certain monitoring/survey data are excluded in the above process, state the reasons for their exclusion. Possible reasons could be related to survey location, data reliability and so on.

3-3. Selection of monitoring/survey data for sub-area assessment

3.4. If the assessment area is divided into sub-areas, the data for the sub-area assessment should be selected based on the location of the survey/monitoring sites.

3-4. Data processing

3.5. Process the selected monitoring/survey data into assessment values in accordance with the methods established in 3.1.

3.6. In principal, process monitoring/survey data of all survey/monitoring site.

3.7. Prior to data processing, it is preferable to arrange the monitoring/survey data into data sets (e.g. data sets for each assessment parameter and survey/monitoring site).

4. Setting of assessment criteria

4.1. Eutrophication status of an assessment area is assessed based on a set of assessment criteria. Detail explanations are provided in the ensuing sections.

4-1. Setting of criteria for selection of eutrophication identification tools

4.2. Eutrophication status based on each assessment parameter is assessed by identifying its current status and/or trend. The current status and trend of an assessment parameter are identified by using a combination of the following 3 identification tools. Selection of the identification tools should be based on set identification criteria*.

*Identification criteria: Criteria for selecting the identification tools for the assessment.

i) Identification by comparison (identifies current status): The eutrophication status is identified by comparing the obtained assessment value (e.g. annual mean value) ~~with either environmental standards (standards may be set as absolute value or have a range of values such as for DO and chlorophyll-a) or~~ by background value (e.g. measurement values obtained at an area that has had negligible influence from anthropogenic activities), historical data, ecological modeling or expert judgment. This identification tool is used for assessment parameters that can be expressed by concentration or ratio (e.g. N/P ratio).

- Approaches to set reference values in each selected sea area were different in case studies that were conducted in the 2010-2011 biennium. Need for more standardized approach has been pointed out by the experts and Focal Points for easier comparison of data.
- Refined approach was proposed by reference to HELCOM or OSPAR approaches to set reference values.

ii) Identification by occurrence (identifies current status): Eutrophication status is identified by occurrence or non-occurrence of eutrophication-related events. This identification tool is used for assessment parameters that can be expressed by number or frequency of events (e.g. red tide).

iii) Identification by trend (identifies trend): Eutrophication status is identified by identifying the trend. This identification tool can be used for all assessment parameters with reasonably long time series. The Mann-Kendall test should be used to detect trend statistically.

- Approaches to detect trend in each selected sea area were different in case studies that were conducted in the 2010-2011 biennium. Need for more standardized approach has been pointed out by the experts and Focal Points for easier comparison of data.
- Refined approach was proposed by reference to Suikkanen et al. (2007). A non-parametric trend test should be used, because water quality data were not often normally distributed. In the Mann-Kendall procedure, the data need not conform to any particular distribution and missing values are allowed (Gilbert. 1987)

4-2. Setting of criteria for classifying the eutrophication status of assessment parameter

4.4. After identifying the current status and/or trend with the eutrophication identification tool, the eutrophication status of the assessment parameter should be classified based on set classification criteria*.

*Classification criteria: Criteria for classifying the eutrophication status of assessment parameters.

4.5. Table 3 shows the identification tools applied to each assessment parameter in the Toyama Bay case study.

Table 3 Identification tools to be applied to each assessment parameter ~~in the Toyama Bay case study~~

Category	Assessment parameter	Assessment value	Identification tools[1)]			Remarks
			Comparison	Occurrence	Trend	
I	Riverine input (T-N, T-P)	Annual mean			✓	
	Input of industrial waste water	Annual mean	✓		✓	
	Winter DIN/DIP concentration	Winter mean	✓		✓	
	Winter N/P ratio (DIN/DIP)	Winter mean	✓		✓	
	Total nitrogen/Total phosphorus (T-N, T-P)	Annual mean	✓		✓	
II	Chlorophyll-a concentration (field data)	Annual max. Annual mean	✓		✓	
	Chlorophyll-a concentration (remote sensing data)	Annual max. Annual mean	✓		✓	
	Red-tide events (diatom species)	Annual occurrences		✓	✓	
III	Dissolved oxygen (DO) at bottom	Annual min.	✓		✓	
	Abnormal fish kill incidents	Annual occurrences		✓	✓	
	Chemical oxygen demand (COD)	Annual mean	✓		✓	
IV	Red-tide events (*Noctiluca* sp.)	Annual occurrences		✓	✓	
	Shellfish poisoning incidents	Annual occurrences		✓	✓	

1) Comparison: comparison with ~~environmental standard or background value reference values set by~~ background value, historical data, ecological modeling or expert judgment.
Occurrence: occurrence or non-occurrence
Trend: ~~degree of~~ significance in increase/decrease trend

The above changes were made with the revisions of 4.2.

4.6. Following is an example of classification criteria used to classify the eutrophication status of the assessment parameters. Current status is classified as either ‘high status’ or ‘low status’, and trend is classified as either ‘decrease trend’, ‘no trend’ or ‘increase trend’. The classification results of the current status and trend are then combined together to produce 9 categories of eutrophication status (see Figure 3). If the assessment parameter is assessed only with the trend method, the assessment parameter will be classified as either ‘decrease trend’, ‘no trend’ or ‘increase trend’.

4.7. Figure 3 shows an example of classification criteria set to classify the eutrophication status of assessment parameter.

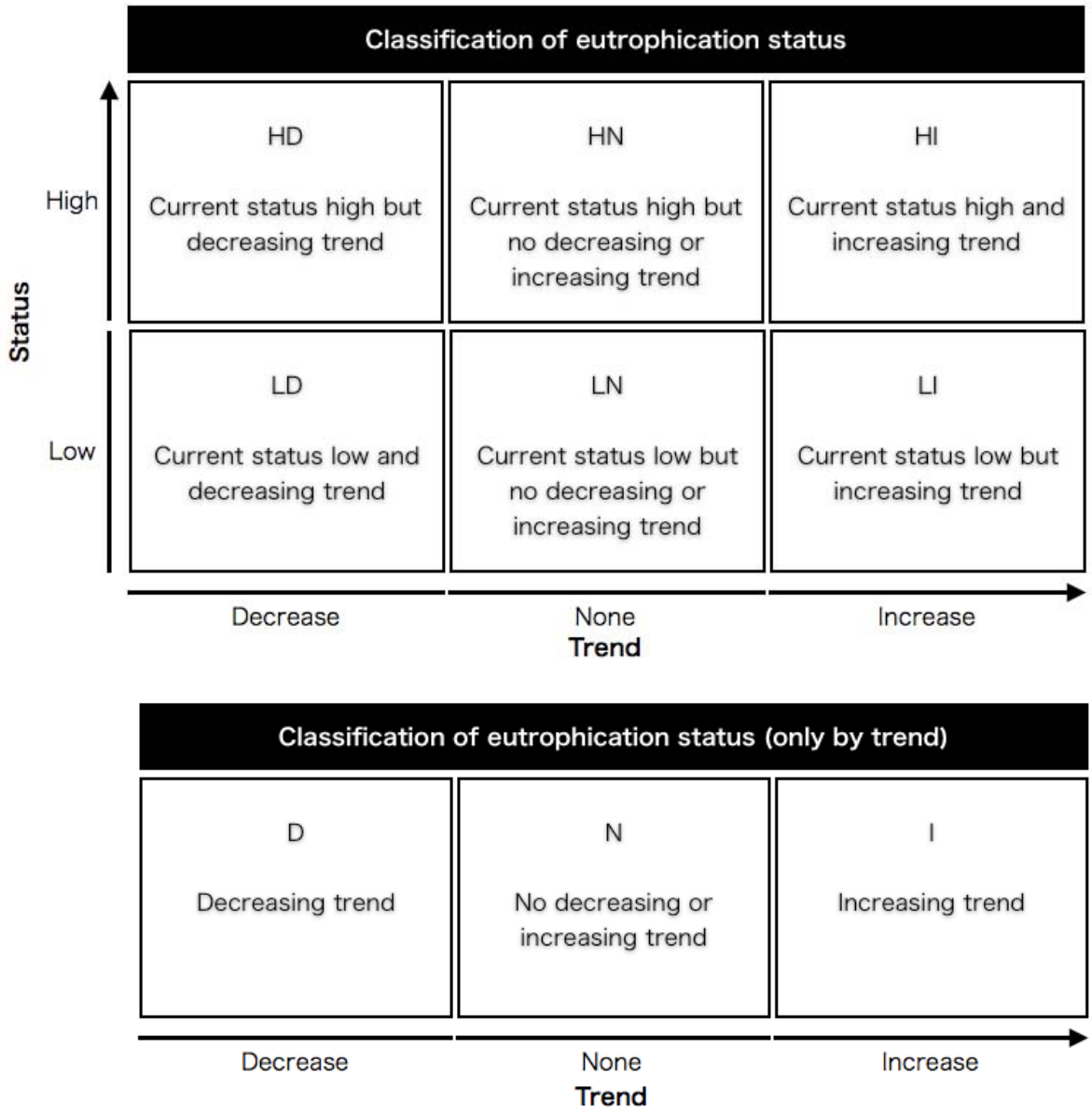

Figure 3 An example of classification criteria set to classify the eutrophication status of assessment parameter

4-3. Setting of criteria for classifying the assessment category

4.8. Determine the eutrophication status of the assessment category by setting assessment category classification criteria.

4.9. Classify eutrophication status of the assessment category by selecting one classification result of the assessment parameters within the assessment category that most appropriately represents the eutrophication status of the area. However, if the classification results are contradictory among the assessment parameters in the assessment category, and therefore if it is unreasonable to select a representative classification result, this assessment category can be excluded from the classification procedure with its reasons stated.

4-4. Setting of criteria for classifying the assessment area/sub-area

4.10. Set holistic assessment criteria for the assessment area/sub-area so as to diagnostically explain classification results of each assessment parameter and category.

5. Assessment process and results

5.1. The eutrophication status of the assessment area should be assessed on the basis of the identification results of the assessment data and classification results of each parameter and parameter's categories.

5.2. Identify the eutrophication status of the assessment data of each monitoring site based on the set identification criteria.

5.3. Classify each assessment parameter based on the identification results of the assessment data. If there are multiple monitoring sites in each sub-area, the identification results from all the monitoring sites should be taken into account.

5.4. Classify each assessment category based on the classification results of assessment parameters.

5.5. The eutrophication status of each area/sub-area should be assessed based on the classification results of each assessment parameter and category.

5.6. Explain diagnostically classification results of each assessment parameter and category.

6. Review of results

6.1. The assessment report should have all necessary information required for the objective review of the .assessment results.

6.2. If applicable, new techniques such as remote sensing could also be used for reviewing of the assessment results.

6.3. It is recommended to have interpretation of the results; if there is eutrophicated/oligotrophic status and/or trend, the possible reasons, such as changes of nutrient loads caused by anthropogenic activities and/or climate change would be described.

7. Conclusion and recommendations

7.1. Based on the assessment results, provide recommendations for future actions.

7.2. The results of each classification process should be clearly presented, so that policy makers etc. can consider the most appropriate monitoring or countermeasures against eutrophication.