1 Background

The 10th Inter Governmental Meeting (IGM) (24-26 November 2005, Toyama, Japan) of NOWPAP approved the new direction for the NOWPAP RACs including the new activities of CEARAC such as Marine Litter and Land Based Source for pollution. Following the the 10th IGM, workplan and budget of CEARAC for the 2006 - 2007 biennium including new activities was submitted and approved at the 4th CEARAC Focal Point Meeting (FPM) (8-9 March 2006, Toyama, Japan). The 4th CEARAC FPM made a suggestion that long-term objectives to be documented in a workplan in the future.

In response to the suggestion made at the 4th CEARAC FPM, and considering the responsibility of CEARAC which was initially given at its inception, the CEARAC secretariat herein presents draft mid and long-term objectives of NOWPAP Working Group 3 (WG3) and Working Group 4 (WG4) that intends to serve as a basis for discussion for future joint activity of NOWPAP WG3 and WG4.

2 Mid and long term strategy of CEARAC

CEARAC was established on 17 July 2002 under the Memorandum of Understanding (MOU) between UNEP and the Northwest Pacific Region environmental Cooperation Center (NPEC) in Toyama, Japan.

The MOU defines the responsibility of CEARAC as coordination of regional activities for assessment of the state of the marine, coastal and associated freshwater environments, including assessment of pollutant input for the purpose of comparison with the monitoring results. CEARAC is also expected to develop tools for environmental assessment, which can be used and shared among the member States as assessment tool that includes special techniques for monitoring and assessment.

In accordance with the given responsibility and in consideration of accommodating new direction and activities, CEARAC proposes the following strategy for implementation of future activities.

2.1 Guiding principles of the strategy

The strategy will use the following principles as a guide:

a To focus on assessment of the state of the marine, coastal and associated freshwater environments

b To make the best use of the accumulated experiences and achievements gained from the past activities

c To make the best use of ongoing CEARAC activities

d To be able to accommodate new activities

e To lead to a positive outcome in the most synergistic and non-duplicating way, through cooperating with other NOWPAP RACs and relevant national /regional/international institution/organizations

2.2 Mid term strategy of CEARAC

As activities of CEARAC scheduled for the 2006-2007 biennium, WG 3 will make “Booklet of countermeasure to terminate or mitigate red tides” to contribute to establish policies and measures against red tides in stakeholders and related agencies. WG4 is planning to develop a Guideline for Eutrophicaion Monitoring by Remote Sensing in 2006. Remote Sensing training course on data analysis will be conducted to disseminate the usefulness of remote sensing data for coastal zone eutrophication monitoring in 2007.

Marine litter related activity (MALITA) will be implemented under the initiative of the NOWPAP RCU. CEARAC is allocated with the responsibility to develop regional and national strategies on integrated management of marine litter, and develop and implement long-term regional and national monitoring programmes on land-based marine litter, including formats for data gathering and storage.

Through the implementation of the above activities for the 2006–2007 biennium, it is anticipated that CEARAC will gain extensive knowledge and know how on establishing cooperative monitoring and assessment program of coastal environment in cooperation with the NOWPAP Members, which will be a fundamental factor to develop common tools for environment assessment.

Therefore, bearing in mind the given responsibility for CEARAC of its inception and considering Marine Litter and Land Based Source for pollution as one of indicators for the state of the marine, coastal and associated freshwater environments, CEARAC will take a medium term strategy to develop tools for environmental assessment, which can be used and shared among the NOWPAP Members as a common environment assessment tool that utilizes remote sensing techniques (Fig. 1.).

2.3 Long term strategy of CEARAC

Upon the development of tools for environmental assessment, CEARAC will take a long-term strategy to further develop the environmental assessment tools with physical and ecosystem model, to predict coastal environment change.

In parallel, CEARAC will disseminate the developed/developing environment assessment/prediction tools to the NOWPAP Member, through necessary and desirable training programs (Fig. 1.).

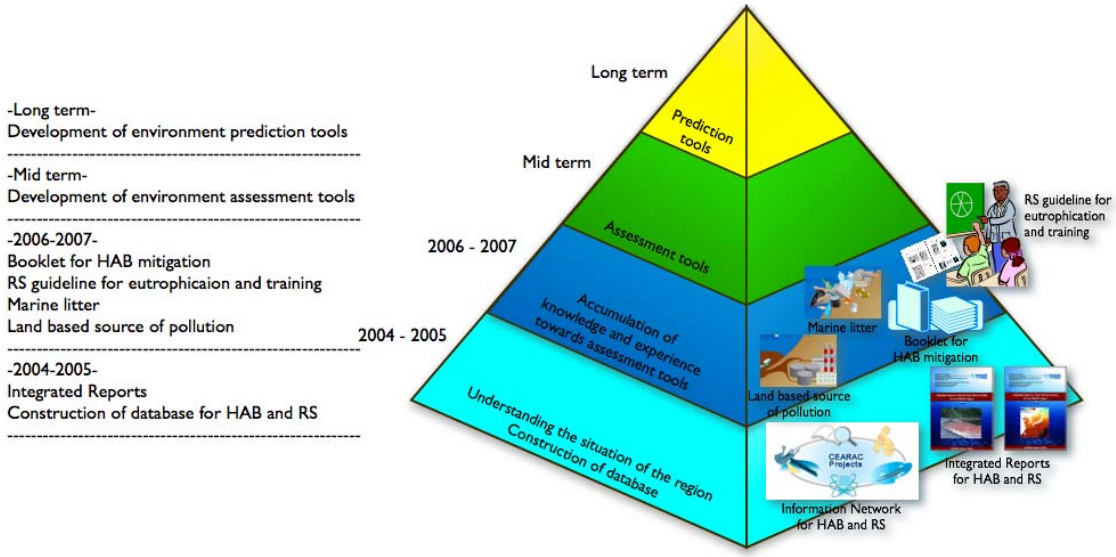

Fig. 1. Mid and long term strategy of CEARAC.

3 Mid and long term objectives of NOWPAP WG3

Recognizing that the mid and long-term strategy of CEARAC and the WG3 work plan scheduled for the 2006-2007 biennium, it is proposed that WG3 will aim at understanding of interaction between Harmful Algal Bloom (HAB) species and ocean environment (eutrophication) for developing coastal environment assessment tool, with initially focusing on oceanic parameters that influence to HAB occurrence.

The information about HAB species, location of bloom and etc. have been collected and organized in the Integrated Report on HAB. However, there is no data or information of environmental parameters (such as temperature, salinity and nutrient etc.) under the occurrence of red tide in this report. In the mid term, WG3 will review the information of Integrated Report, and collect and standardize the environmental parameters associated with HAB occurrence to help understand the interaction between HAB species and ocean environment.

In the long term, the collected and standardized data will be incorporated into ecosystem model for the construction of prediction tool for the NOWPAP Region.

A possible method for collecting standardized data is developing a common monitoring guideline for the NOWPAP Region to share the data and information and ask the related organizations to collect the data based on this monitoring guideline. However, this common monitoring will not be implemented in all red tide areas but limited to the areas where red tides frequently occur or will likely to occur in the future, namely “Red tide hot spot”. Collection of data will start with the Red tide hot spot as a pilot study but it has a potential to expand to the entire NOWPAP Region by social need. “Red tide hot spot” and target species are determined by opinions of experts, research trend, background and history of red tide in the NOWPAP Region. And collected the data is used for understanding environmental parameters leaded to HAB occurrence and should be

released on a web site for sharing the information.

While WG4 will aim at design the framework of system for the coastal environmental assessment tool utilizing remote sensing data, result from WG3 activity is incorporated into this system and will help develop of coastal environmental assessment tool.

4 Mid and long term objectives of NOWPAP WG4

Recognizing that the mid and long-term strategy of CEARAC and the WG4 work plan scheduled for the 2006-2007 biennium, it is proposed that WG4 will aim at coordinating the development of environment assessment tools utilizing remote sensing data in the mid term, with initially focusing on the assessment of eutrophication realizing that they are basic indicators for water quality of the region. System design of such assessment tools will be flexible to accommodate other environmental indicators such as HAB, oil spills, marine litters or land-based sources of pollution.

Coordination of the development of such environment tools by WG4 will be developing a concept and making practical proposals on the system design of such tools. Proposals on graphical user interfaces, functions and information on environmental parameters to be incorporated in the tool will be discussed in WG4, from a standpoint to maximize the use of remote sensing data. Furthermore, selection of environmental parameters will be coordinated with the cooperation of WG3 experts, who have wide knowledge in HAB and ocean environment.

While WG3 will aim at understanding of interaction between HAB species and ocean environment (especially eutrophication) for developing coastal environment assessment tool with an ecosystem approach, WG4 will aim at design the framework of system for the coastal environment assessment tool utilizing remote sensing data with a technological approach.

In the long term, following the development for environmental assessment tool, WG4 will aim at coordinating the development of prediction tools with existing physical and ecosystem model.

5 Mid and long-term Implementation structure of NOPWAP WG3 and WG4

In order to efficiently achieve the proposed objectives of NOWPAP WG3 and WG4 in accordance with the mid and long-tem strategy and also with the limited budget and capacity of the CEARAC secretariat, the following plans are proposed implementation structure of NOWPAP WG3 and WG4 from 2008 (Table 1.). Each plan has advantage and disadvantage and needs to be carefully considered and discussed.

Table 1. Advantages and disadvantages of each implementation structure.

Plan	Structure	Advantage	Disadvantage
Plan A	Remain WG3 and WG4 as is or reduce the number of experts to participate the meeting	● Easier to improve the quality of existing activities and databases.	● Difficult to focus on new subject. ● Budget allocation is uncertain. ● Not all the experts can attend the meeting.
Plan B	Unify WG3 and WG4 together and establish new working group	● Easier to focus on new subject with new member.	● Difficult to invest much effort on existing activities and databases. ● Reconfiguration of experts may be needed.

6 Expected role of CEARAC in NOWPAP

Activities of CEARAC will be implemented based on the principle that the scope of responsibility is given as coordination of regional activities for assessment of the state of the marine, coastal and associated freshwater environments. Along with the mid and long term strategy, CEARAC will pursue the goal of developing environment assessment and prediction tools to the NOWPAP Member. Through developing these tools, CEARAC will contribute to provide essential information for proper management of marine and coastal environment, especially for POMRAC that is considering working on activities related to Integrated Coastal and River Basin Management.

As a whole, all CEARAC activities will contribute to achieve the overall goal of the Northwest Pacific Action Plan, “the wise use, development and management of the marine and coastal environment so as to obtain the utmost long-term benefits for the human populations of the region, while securing the region's sustainability for future generations”.