Annex V

Plan of Work for NOWPAP Working Group 3

Reviewed by the First Meeting of NOWPAP WG3

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1. BACKGROUND

Establishment of a collaborative regional monitoring programme was identified as one of areas of the priority for implementation of NOWPAP in the first NOWPAP Intergovernmental Meeting in Seoul, September 1994. The responsibility for NOWPAP/3 (Regional Monitoring Programme) was jointly shared by the Special Monitoring and Coastal Environment Assessment Regional Activity Center (CEARAC) and the Pollution Monitoring Regional Activity Center (POMRAC) to carry out regional activities.

The 7th Intergovernmental Meeting in March 2002 allocated NOWPAP CEARAC the responsibility to implement activities of Working Group (WG) 3 for HAB as a part of Coastal Environmental Assessment and WG 4 for Remote Sensing of Marine Environment as a part of Special monitoring. The present document proposes the Plan of Work for WG 3.

In the first FPM of CEARAC in February 2003, the HAB subgroup chaired by Dr. Fukuyo agreed that the following four main issues needed to be focused on;

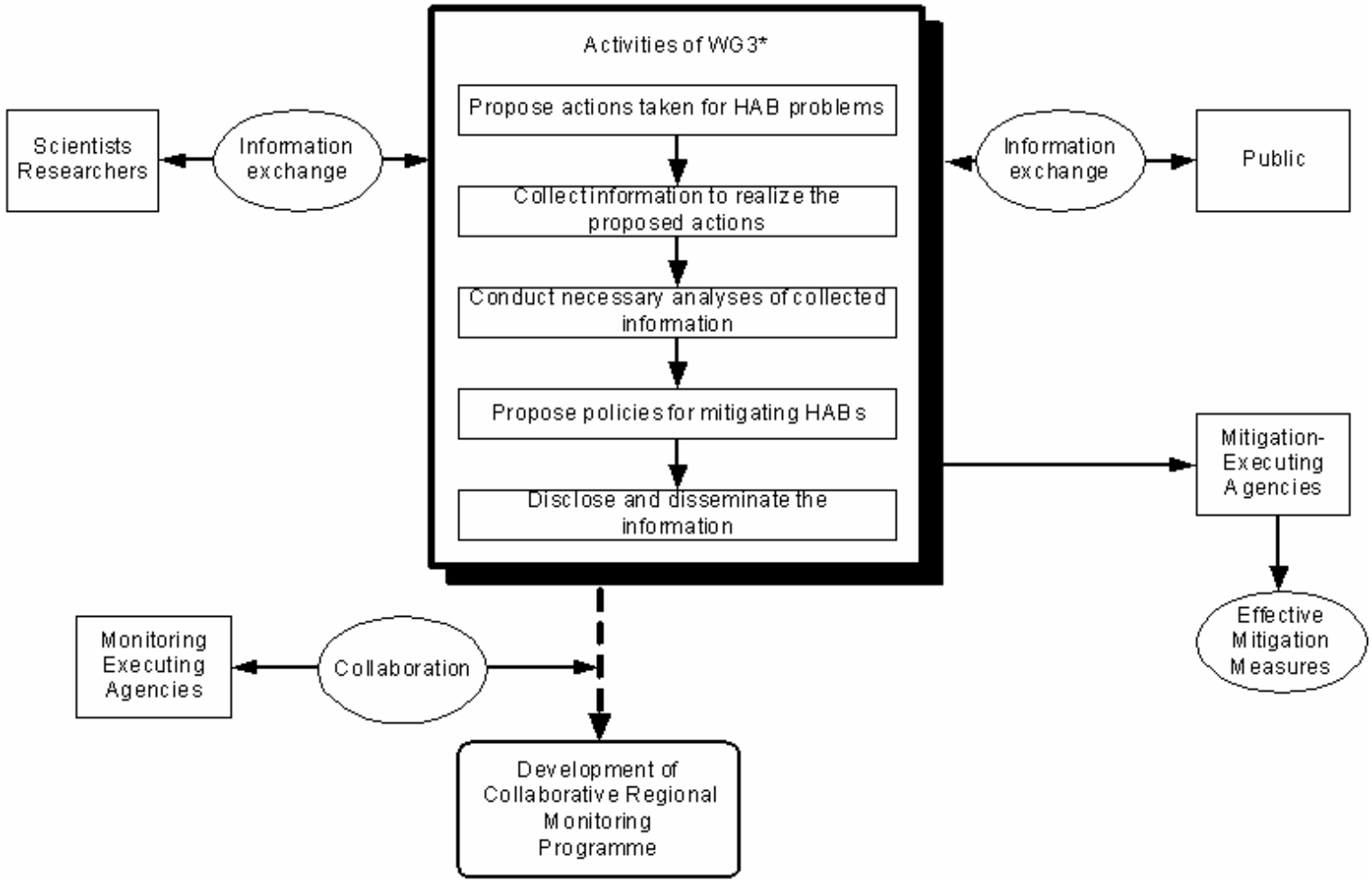
1. Review of the integrated national reports to be prepared by CEARAC with the view to;
   a. Standardize and establish a system to update national reporting,
   b. Establish a meta-database on HAB while taking into consideration existing relevant databases, and
   c. Consider environmental parameters to be added to the meta-database.
2. Identification and prioritization of the needs and capabilities through;
   a. Inter-calibration exercises,
   b. Capacity building to improve the quality of monitoring,
   c. Training (taxonomy, toxicology, etc.), and
   d. Identification and dissemination of new techniques.
3. Identification of important scientific issues and assessment of the potential to incorporate these within the NOWPAP framework.
4. Establish information dissemination strategies through the development of regional and national portals which would deal with specific sectors such as aquaculture, tourism, public education with the final aim of enhancing the visibility of CEARAC HAB.

2. OBJECTIVE

The goal of CEARAC WG3 is to develop the capability to provide policy makers with necessary information on HABs. CEARAC WG3 shall accumulate and distribute knowledge on HABs and shall have an eye on the development of collaborative monitoring system on HABs in NOWPAP Region.

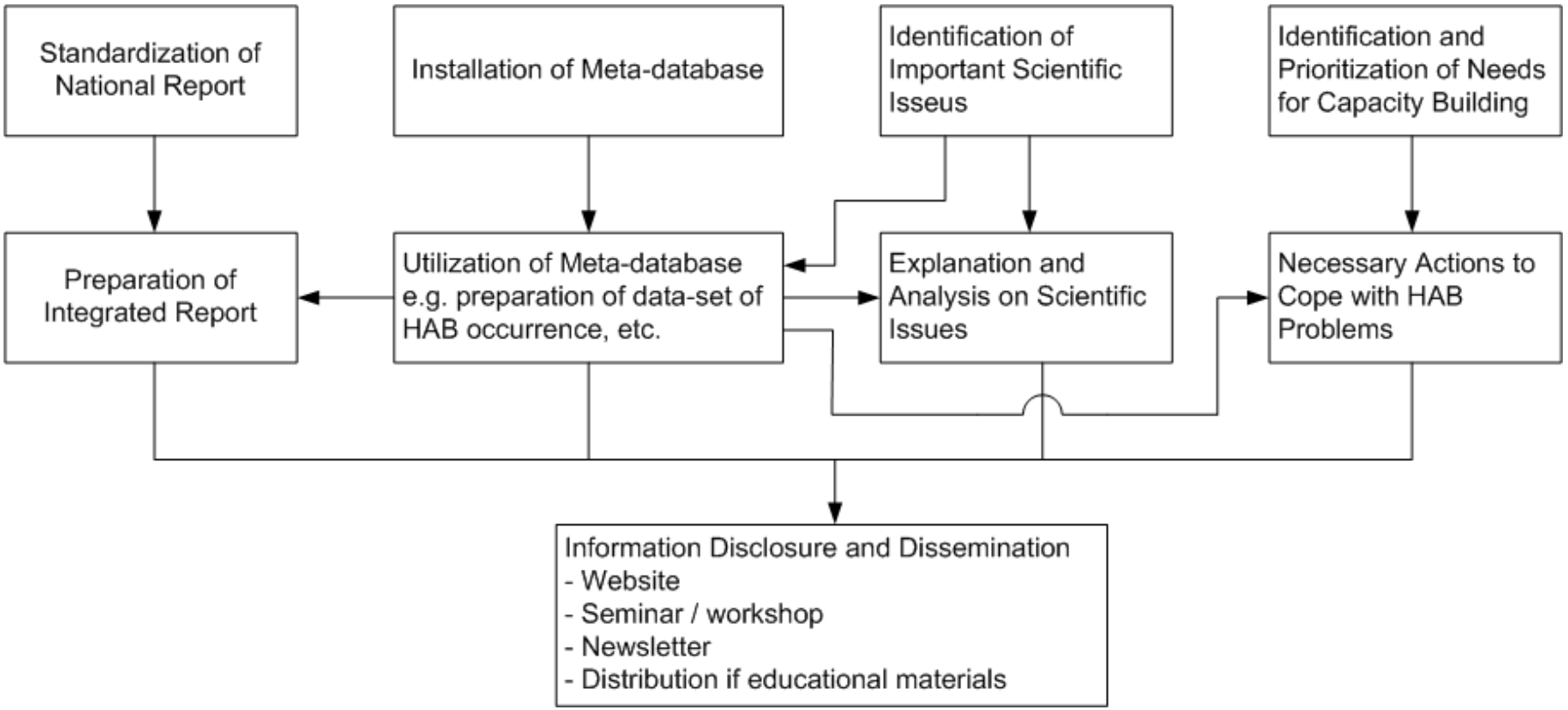
The objectives of CEARAC WG3 include to propose activities to cope with the HAB problems, to collect information to realize the proposed activities, and to carry out necessary analyses of collected information to make policies for mitigation to HABs.

The objective of the present document is to provide a progressed Plan of Work for Combating the HAB in NOWPAP Region. It is most important to know about the HAB in the NOWPAP Region for considering mitigation measures against HABs. Red tide monitoring should be particularly fundamental and important measures. Since CEARAC is neither a monitoring-executing agency nor a mitigation-executing agency, and many executing agencies have their own purpose of the monitoring or mitigation measures, it may be difficult to immediately organize a collaborative monitoring or mitigation scheme in NOWPAP Region. Instead, CEARAC will facilitate the Region’s monitoring and mitigation activities through the formation of the common understanding on HABs, provision of scientific basis for HAB analysis, and dissemination of information on HAB studies. These will realize the collaborative HAB monitoring and proper mitigation measures in the region



Schematic diagram of roles of CEARAC WG3

* : Concrete activities are shown in the following diagram



Schematic diagram of activities and functions of CEARAC WG3

3. ACTIONS TO BE TAKEN

Necessary tasks should be done in accordance with issues pointed out in the Section 1 above.

3.1 Identification of Important Scientific Issues to Cope with HAB Problem

The concept of HAB comprehends both red tides regardless of the toxicity and occurrence of toxic plankton. The present plan proposes a one-by-one approach, giving the first priority to the red tide to be focused on in the WG3. It is because nowadays the red tides occur in most coastal waters that receive the intensive impacts of human activities, and are easy to be observed. This feature will help a wide range of individuals/parties/organizations have concerns and participate in the activities coping with HAB. The toxic plankton will be addressed as the next topic.

The red tide involves many aspects to be solved as explained by the National Reports submitted to the 1st FPM in February 2003 (see Appendix 1 to Annex V-1, Draft Integrated Report 2003). The one-by-one approach may also be employed here, because it would be rational for WG3 not to make efforts for all scientific aspects at the same time, but to focus on a single issue every year. The eutrophication was a common concern for all Members as one of the mechanisms of red tide occurrence. In addition, other international organizations have not extended their concerns in this issue so much to the NOWPAP Region. Also, this issue must be one of the keys to develop the preventive/mitigation measures to the red tide. Therefore, the relationship between the red tide occurrence and eutrophication should be focused on with the priority. The past studies to find the said relationship will be introduced in the Integrated Report 2003.

A topic of particular importance is the monitoring. However, the information on the monitoring from the National Reports submitted to the first FPM, was not enough to understand the present situation and to propose any progress of the monitoring system. Consequently questions were asked prior to the WG3, to WG members as the first step to develop a collaborative HAB monitoring (see Annex V-2). Answers are shown in draft Integrated Report (Annex V-1).

Other scientifically important issues will be focused on the WG3 thereinafter, including;

- study method such as field work, experiment, and numerical simulation,
- fish/shellfish poisoning,
- feasibility study of mitigation measures,
- technical training for HAB analysis, and
- preparation of practical pictorial book/sheet of HAB species.

Experts relevant to the above mentioned issues will be kindly requested to contribute the report writing.

3.2 Establishment of Meta-database on HAB (Red Tide)

3.2.1 Features and purposes of meta-database

A meta-database that embraces a wide range of literature concerning the HAB (red tide) in the NOWPAP Region is proposed by CEARAC. It contains the relevant literature covering reports and theses of researches, studies, monitoring, countermeasures, and the capacity building. A list of the relevant literature (Annex V-3) will be distributed to WG members by CEARAC to ask for the information/materials to amend the list and to retrieve the literature as PDF files into the database. The secretariat most welcomes to accept such information and materials. The meta-database will be supplemented with newly obtained reports and theses in the course of the progress of HAB studies in the Region. Thus, the DB will serve as a consolidated and easily available data-source so as to form an common understanding on HAB in the Region, to develop the HAB studies further, and to produce recommendations for policy making against HAB problems.

3.2.2 Consideration of the environmental parameters to be added to meta-database

Any proposal is most welcome to the present meeting.

3.3 Identification and Prioritization of Needs for Capacity Building

Questions on the needs to cope with the HAB problems for each Member were asked prior to the Meeting. Questions include the situation and needs of the inter-calibration exercise, capacity building, training, and new mitigation techniques (see Questionnaire in Annex V-2). The responders, *i.e.* WG members, answered as shown in Table 1.

3.4 Information Dissemination Strategy

All possible measures should be proposed for the dissemination of information obtained through the activities of NOWPAP WG3. Presently, the followings are listed up;

- Provision of a web site to introduce the information on the HAB,
- Collaborative workshops/seminars with other organizations,
- Preparation and distribution of pamphlets/brochures,
- Preparation and distribution of stationery such as a desk pad and a notebook on which HAB

plankton species are printed, and
- Distribution of newsletter.

3.5 Capability of CEARAC Concerning WG3

The present state of the capability of CEARAC is as follows;

- STAFF: 3 Full time (Director, Section Chief, Senior Researcher)
  2 Part time (2 Senior Researchers)
  Note: All CEARAC staff are NPEC staff. (NPEC has 14 staff as a whole)
- FUND: To implement a basic research on HAB and to construct a database on HAB, CEARAC has funds contributed by Toyama Prefectural Government besides UNEP Trust Fund.
  Note: Basically CEARAC entrust implementing a basic research and constructing a database to a consultant

CEARAC has some matters to be concerned to implement further activities, such as;

- FUND: To raise some funds from Japanese Central/ Local Government and other international/ domestic funds for further activities.
- Scientific Capacity: To establish a network with International / Local research institutes to expand the scientific capacity.

3.6 Standardization of National Reports and Integrated Report

See Annex V-1 for the entire contents of the proposed Integrated Report. Also see Annex V-4 for the guidelines for national report.

Rapidly increasing information on the HAB should be incorporated into the National Report in every NOWPAP Member as soon as possible and distributed to the relevant organizations in the Region. A question on the appropriate frequency of the revision of the Report for each Member was asked prior to the WG (see Questionnaire in Annex V-2). The responders, *i.e.* Focal Points and WG members, expressed their opinions as shown in Table 2.

3.7 Long-Term Plan

The long-term plan for WG3 is shown in Table 3

3.8 2004/2005 Work Plan for WG3

Preparatory work plan 2004/2005 for WG3 is shown in Table 4. Proposed concrete activities should commence immediately. The submission of National Reports will be required to check the propriety of the proposed Guidelines for National Report Preparation.

Table 1 Identification and prioritization of needs for capacity building

(1) Improving HAB monitoring – Institutional enhancement

		Legislation	Administration	Organization
Japan	On-going	×	×	
	Future	1	1	3
China	On-going	×		×
	Future	1	3	2
Korea	On-going		×	
	Future	3	2	1
Russia	On-going			×
	Future	1	2	3

(2) Improving HAB monitoring – Technical development

		Satellite	Aircraft	Vessel	Chemical analysis	Species identification	Biological analysis	Data processing	Others
Japan	On-going			×	×	×	×		
	Future	6	5	4	2	1	3	7	
China	On-going	×	×	×	×	×	×	×	
	Future	7	6	1	2	3	4	5	
Korea	On-going			×		×		×	
	Future	1	7	5	3	2	4	6	
Russia	On-going			×		×	×	×	
	Future	5	6	4	2	1	3	7	

(3) Practice of inter-calibration

		Measurement of chemical parameters	Measurement of Chl.a concentration	Species identification	Measurement of cell number	Others
Japan	On-going					PSP toxins
	Future	3	4	1	2	
China	On-going		×	×		
	Future	1	3	2	4	
Korea	On-going			×		
	Future	2	3	1	4	
Russia	On-going			×	×	
	Future	3	4	1	2	PSP, DSP

(4) Acquisition of advanced technology – introduced technology

		Satellite	Aircraft	Detection of toxic substances	HAB prediction	HAB prevention	Counter-measures	Others
Japan	On-going					×	×	
	Future	6	5	3	1	2	4	
China	On-going	×	×	×	×	×	×	
	Future	2	4	3	1	6	5	
Korea	On-going				×	×	×	
	Future	1	2	3	4	5	6	
Russia	On-going							
	Future	2	6	1	3	4	5	

(5) Acquisition of advanced technology – employed training

		Lectures and seminars	Practices in lab. and field	On the job training	Others
Japan	On-going	×	×	×	
	Future	1	3	2	
China	On-going	×	×		
	Future	1	2	3	
Korea	On-going	×	×	×	
	Future	2	3	1	
Russia	On-going				
	Future	3	2	1	

(6) Mitigation measures and their dissemination – Priority mitigation measures

	Japan	China	Korea	Russia
Imagery exchange network	2	3	2	4
Automatic HAB detection	1	4	1	1
HAB attention / alert	4	1	3	2
Clayish soil / flocculants	7	2	4	6
Algicidal virus	5	7	5	7
Diatoms	2	6	6	5
Immunological identification	3	5	7	3
Others				

(7) Mitigation measures and their dissemination – Imagery exchange network

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future	×	×	×		
China	On-going					
	Future		×			
Korea	On-going	×				
	Future	×			×	
Russia	On-going					
	Future		×	×		

(8) Mitigation measures and their dissemination – Automatic HAB detection

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future		×	×		
China	On-going					
	Future	×				
Korea	On-going					
	Future	×	×	×		
Russia	On-going					
	Future	×	×	×		

(9) Mitigation measures and their dissemination – HAB attention / alert system

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going	×	×	×	×	
	Future	×	×	×	×	
China	On-going				×	
	Future	×	×			
Korea	On-going	×		×	×	
	Future				×	
Russia	On-going					
	Future		×	×	×	

(10) Mitigation measures and their dissemination – Spray of clayish soil / flocculants

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future				×	
China	On-going					× (Experimental stage)
	Future		×			
Korea	On-going	×		×	×	
	Future	×		×	×	
Russia	On-going					
	Future	×	×			

(11) Mitigation measures and their dissemination – Algicidal virus

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future	×			×	
China	On-going					
	Future	×	×			
Korea	On-going					
	Future	×		×		
Russia	On-going					
	Future	×	×			

(12) Mitigation measures and their dissemination – Diatoms

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future	×	×	×	×	
China	On-going					× (Experimental stage)
	Future		×			
Korea	On-going					
	Future	×		×		
Russia	On-going					
	Future	×	×			

(13) Mitigation measures and their dissemination – Immunological identification

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future	×	×			
China	On-going					× (Experimental stage)
	Future	×	×			
Korea	On-going					
	Future	×	×	×		
Russia	On-going					
	Future	×	×			

(14) Mitigation measures and their dissemination – Others

		Lectures and seminars	Practices in lab. and field	On the job training	Information disclosure	Others
Japan	On-going					
	Future					
China	On-going					
	Future					
Korea	On-going					
	Future					
Russia	On-going					
	Future					

(15) Priorities to be achieved

	Japan	China	Korea	Russia
Capacity building to improve HAB monitoring	1	1	1	1
Practice of inter-calibration / cross-check for analytical work skills	2	2	4	3
Training for acquisition of advanced technology	3	3	2	2
New mitigation measures and their dissemination	4	4	3	4

Table 2 Frequency of revision of National Report by content

	Japan	China	Korea	Russia
Situation of HAB occurrence	/ 2 yrs	Ad hoc	Yearly	/ 2 yrs
Monitoring Methodology & Results	/ 2 yrs	Ad hoc	/ 2 yrs	/ 2 yrs
Progress of Researches & Studies	Ad hoc	Ad hoc	/ 2 yrs	Ad hoc
Training Activities	Ad hoc	Ad hoc	Ad hoc	Ad hoc
Priority for Future Activity	Ad hoc	Ad hoc	Ad hoc	Ad hoc
Activity for NOWPAP Region	Ad hoc	Ad hoc	Ad hoc	Ad hoc

Table 3 Long-term plan for WG3

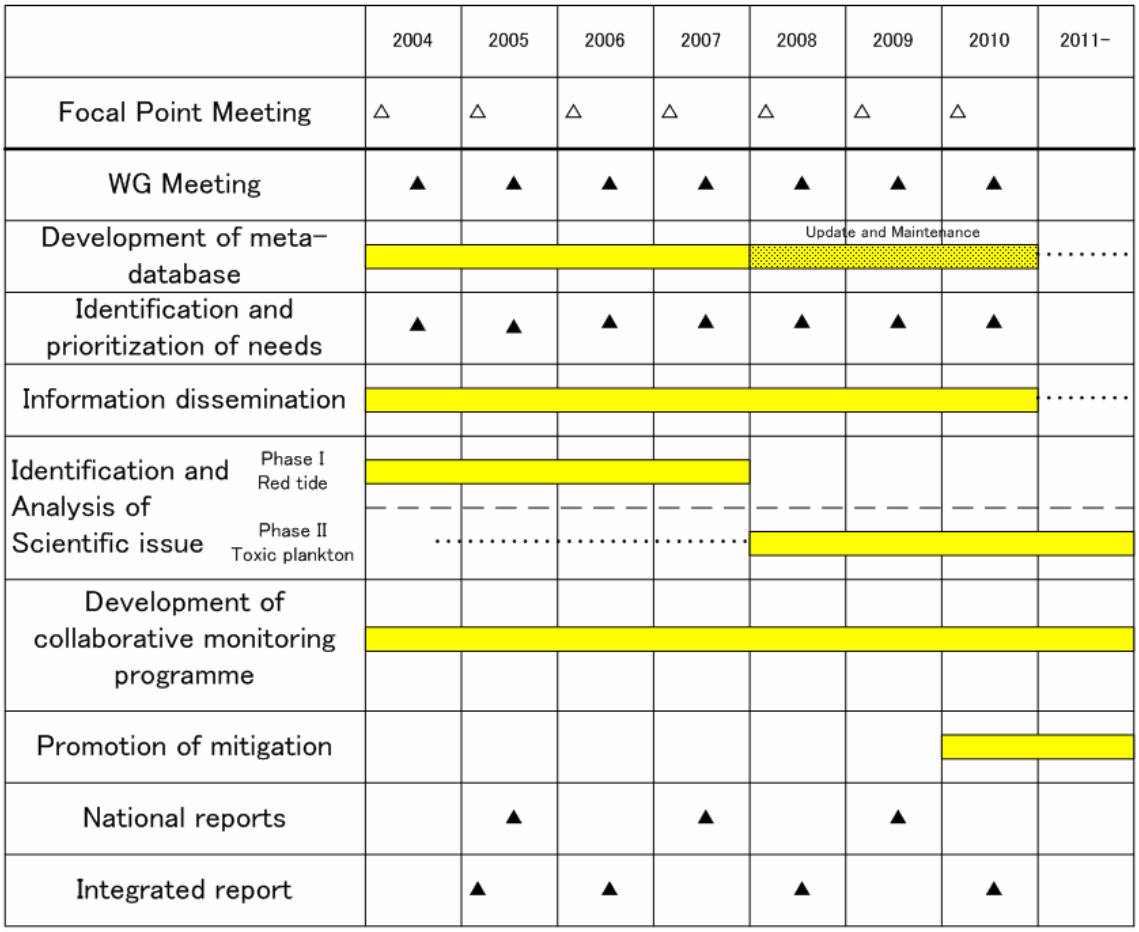


Table 4 Workplan 2004/2005 for WG3

	2004												2005											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Focal Point Meeting			▲												▲									
WG Meeting										▲													▲	
Development of Meta-database																								
Identification and Analysis of Important Scientific Issues																								
Identification and Prioritization of Needs for Capacity Building																								
Development of collaborative monitoring programme																								
Issue of Integrated Report (Submission of National Report)										(▲) trail version					▲								(▲) final version	
Information Disclosure & Dissemination																								
Development of Web Site Content																								
Issue of Newsletter				▲												▲								