UNDP/GEF PROJECT ENTITLED "REDUCING ENVIRONMENTAL STRESS IN THE YELLOW SEA LARGE MARINE ECOSYSTEM"

UNDP/GEF/YS/RWG-P.3/3
Date: 7 September 2006
English only

Third Meeting of the Regional Working Group for the Pollution Component
Dandong, China, 4 - 7 September 2006

Meeting Report

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List of Acronyms

1 OPENING OF THE MEETING

1.1 Welcome addresses

1.1.1 On behalf of the UNDP/GEF Yellow Sea Project, Mr. Yihang Jiang, Project Manager, opened the meeting and welcomed the members of the Regional Working Group-Pollution (RWG-P) to Dandong, China. Mr. Jiang extended a special welcome to representatives from NOWPAP DIN/RAC, Liaoning Province and Dandong Oceanic and Fishery Bureau. The National Marine Environmental Monitoring Center was thanked for helping to organise the logistics; Mr. Oh Jae Ryoung was specially mentioned for his past contribution to regional co-operation, and everyone would be sorry to see him leave for his new job with IAEA. Mr. Shin Kyung Hoon was welcomed as the replacement of Mr. Oh and as future Chairperson of the Korean Pollution group.

1.1.2 Mr. Jiang gave a summary of the stages of the project (TDA, SAP, pilot implementation of SAP), and stated that this meeting would focus on summarising the implementation of the TDA, and preparing for the SAP phase. The first phase of the project focused on data collection for TDA. There had been some delay in national data collection and report submission, leading to a delay in the regional data synthesis report and TDA. However, the consultant preparing the TDA will aim to complete the TDA by the end of October/early November 2006, in time for the RSTP and PSC to review and approve the document, respectively.

1.1.3 Mr. Jiang informed participants that during the meeting, members will discuss how to improve the national reports and prepare them for publication. The causal chain analysis would be re-visited and finalised based on the collected data and information, and collective knowledge of the experts. Finally, the meeting should consider the relevant issues of the preparation of the SAP.

1.1.4 Mr. Wen Quan, Chairperson of the RWG-P, welcomed all participants to Dandong, and invited participants to give opening speeches. Mr. Oh expressed his pleasure in working with this group and other project partners for many years, and was sorry to be leaving. Mr. Huh Hyung Tack stated that he was attending his first RWG-P meeting, and wished to learn from and observe how this group works towards meeting the objectives of the project.

1.1.5 Mr. Li Qiang stated that Liaoning Province has been paying much attention to marine environment protection in recent years, and the provincial government has enacted regulations to this effect. His participation at the meeting reflected Liaoning Province's concern on marine environment management and interest in the Yellow Sea Project.

1.1.6 Mr. Wang Jianguo, Director of NOWPAP DIN/RAC, thanked the organisers for inviting NOWPAP to attend the meeting, and looked forward to continued co-operation, as both organisations have similar objectives of marine environment protection and management.

1.2 Introduction of members

1.2.1 Members and other participants were invited to introduce themselves and give a brief introduction on their background and roles in the Project. The list of participants is attached to this report as Annex I.

2 ORGANISATION OF THE MEETING

2.1 Documentation Available to the Meeting

2.1.1 Mr. Wen invited the Secretariat (Project Management Office) to introduce this agenda item. Ms. Connie Chiang introduced the meeting's working and information documents prepared by the PMO (Document UNDP/GEF/YS/RWG-P.3/inf.1), alerting participants to the addition of two documents related to the TDA. The list of documents is attached as Annex II. She informed the meeting that all the relevant documents were sent to the members of the RWG-P, and made available on the project website.

2.2 Organisation of Work

2.2.1 The Secretariat presented the provisional working programme for the meeting (Document UNDP/GEF/YS/RWG-P.3/inf.3). The Chairperson informed the meeting about the organisation of work. Due to the nature of the agenda items to be discussed, the meeting would be organised in plenary as far as possible. Sessional working groups would be formed if deemed necessary.

2.2.2 The meeting was conducted in English.

3 ADOPTION OF THE MEETING AGENDA

3.1 The Chairperson introduced the Provisional Agenda (Document UNDP/GEF/YS/RWG-P.3/1) and Provisional Annotated Agenda (Document UNDP/GEF/YS/RWG-P.3/2) prepared by the PMO.

3.2 Mr. Jiang informed members that the agenda on TDA will focus on how the TDA will be prepared, and include the causal chain analysis for pollution issues.

3.3 The meeting adopted the agenda which is attached as Annex III to this report.

4 EXPECTED OUTPUTS FROM THE 3RD RWG-P MEETING

4.1 The Chairperson invited the PMO to present the expected outputs of the meeting (Document UNDP/GEF/YS/RWG-P.3/4). Ms. Chiang presented the list of expected outputs to be achieved at the meeting, provided some details for each agenda item's objective, and alerted the participants to the focus on considering the actions needed for preparation of the SAP.

4.2 Mr. Jiang added that the casual chain analysis would be another important output from the meeting, and would need to be done by this group of experts, and not an individual.

4.3 The members noted the expected outputs presented by the PMO.

5 REVIEW OF COMPLETED AND ON-GOING POLLUTION COMPONENT ACTIVITIES

5.1 Data and Information Status, Trends and New Findings

5.1.1 National data and information collection

5.1.1.1 Mr. Wen presented the report for the data and information collection activity carried out by China. He first mentioned the databases used and cities that were visited to collect the data and information, and then presented all the collected data and information.

5.1.1.2 Mr. Oh presented the report from Korea, showing the available and lacking data with many data on PAH. Mr. Oh informed the meeting that more data do exist, but not all are available to the public.

5.1.1.3 As the data presented from both countries were still shown in different ways, Mr. Oh and Ms. Wang Juying formed a working group to discuss and finalise the method to present the data in a uniform manner, to assist with the presentation of data for the regional synthesis. The working group recommended, and the Meeting agreed that data should be shown as follows:

- **Rectangular partitioning of Yellow Sea basin into 11 regions, each 1.5 x 1.5 degrees. The new partition is shown in Annex IV;**
- **Presentation of regional data should focus on nutrients, with maximum, minimum and average values shown, as well as the horizontal and vertical distributions and trends. Korea will provide all nutrient data to the Chinese team, and the Chinese team will produce basin scale presentation of horizontal and vertical distributions and temporal trends, if data are available.**
- **Data should be shown by season, with each three month period representing one season, starting with March to May = spring, June to August = summer, etc.**
- **Requirements for other presentations of parameters at the basin scale will be further discussed with the consultant for the regional synthesis.**

5.1.1.4 Other agreements included:

- **The Korea National Data Collection Team will provide horizontal and vertical distribution maps for nitrate, nitrite, silicate, and phosphate, and other parameters as necessary and based on available data.**
- **The Chinese National Data Collection Team will provide graphic charts to show the maximum, minimum and mean values for the parameters necessary for finalising the reports, and based on available data.**
- **China and Korea teams agreed to provide additional data to the regional synthesis consultant, if deemed necessary.**
- **All teams will submit additional data presentation figures and maps to the regional synthesis consultant by 10th October 2006.**
- **Data on physical variables can be provided by both teams to the regional synthesis consultant if the consultant requires them. This will be separately discussed between the teams and the consultant.**

5.1.2 Regional data and information synthesis

5.1.2.1 Mr. Kim Hak-Gyoon gave a summary report on the regional synthesis of pollution data. He mentioned the purpose, method, and sources of data. Both countries have

similar data, but the temporal and spatial scales might be different. From his analysis thus far, Mr. Kim drew the following conclusions:

- There is an increase in eutrophication in the Yellow Sea;
- There appears to be four "hot spots" of eutrophication – Bohai Sea, Yalu River, Yangtze River and Han River;
- Heavy metals and POPs are heterogeneously distributed;
- HABs are becoming more frequent and widespread, with causative species shift from diatoms to dinoflagellates, and negative impacts of food poisoning in humans and fish mortality;
- High nutrients levels cause increase in biomass, resulting in HAB and increased fish mortality, which also result in an overall decrease in biodiversity;
- There is a need for more data along some coasts, and there are not enough data on heavy metals and POPs; and
- It is not clear what are the origins and pathways of pollutants.

5.1.2.2 In the subsequent discussion, Mr. Michael Bewers noted that there appeared to be considerable consistency between the nutrient and primary production (algal production) data presented in this draft report and in the material prepared by the Ecosystem WG.

5.1.2.3 In the context of harmful algal blooms, he asked if there were data for the incidence of PSP, DSP and ASP in China and Korea that might indicate the incidence of toxic algal blooms in the region. He noted that the human health sector was not included in the list of sectors affected by pollution in the Yellow Sea. This sector is not only important in terms of the incidence of natural toxins in sea foods, but also the consumption of seafood contaminated with chemicals and human pathogens.

5.1.2.4 Mr. Kim shared the views of Mr. Bewers and confirmed that data on the incidence and trends in PSP, DSP and ASP were available, but are restricted. However, a summary statement about the extent of the incidence of these toxic effects and trends would be provided where available.

5.1.2.5 Finally, Mr. Bewers wished to bring to the attention of the meeting, the description of the "Synthesis of Reductions in Stress on the Ecosystem, Improvement of Water Quality and the Protection of Human Health", which is quoted in other project documents as containing the following topics:

- stressors of the ecosystem;
- carrying capacity of the ecosystem;
- contaminant inputs, contaminant levels; contaminant fate and transport;
- harmful algal blooms and emerging disease;
- hot-spot analysis;
- emergency planning and preparedness; and
- related legal and regulatory issues.

5.1.2.6 Not all of these topics are covered by the draft regional synthesis on pollution. Therefore, Mr. Bewers asked if any changes to the content of the synthesis have been approved by the PSC.

5.1.2.7 Mr. Jiang responded that, as yet, the PSC has not considered any changes to the content of the synthesis reports but that it could consider this matter and make

appropriate decisions at its next meeting in November 2006 when it reviews the synthesis reports.

5.1.2.8 With regard to publication of the national reports and regional synthesis, **members agreed on a schedule to improve and finalise the national reports, submit additional data to the regional synthesis consultant, and provide the final regional synthesis report to the TDA consultant.** The schedule is included in the workplan, and is attached as Annex XI. Before publishing the regional synthesis, the document should be reviewed by the national working groups.

5.1.2.9 **Members also agreed to look again at the status of the final reports over the next two months, then decide on whether English editing would be necessary.** During the 3rd RSTP meeting to be held in November 2006, the situation will be reviewed to finalise the details of the publication.

5.2 Other Activities

5.2.1 Inter-calibration exercises for nutrients in seawater

5.2.1.1 The PMO gave a summary of this activity (Document UNDP/GEF/YS/RWG-P.3/7), noting that the results of the exercise were described in the activity report which is attached as an appendix to the working document. The second round of the same exercise is being carried out now for the same nutrients, using a different set of standard reference materials.

5.2.1.2 Mr. Jiang commended all the participating labs for achieving a high acceptance rate from the exercise. He also noted that 10 labs were invited and all confirmed their participation in this exercise, but only 7 labs returned results, with only 1 lab giving a reason for not participating. He hoped that in the upcoming inter-calibration exercises for organics and metals, the participating labs would be more serious with the commitment from each lab that expresses its willingness to participate.

5.2.1.3 A short discussion ensued about where to obtain standard reference materials for organics and metals. Mr. Bewers undertook to find out, during October 2006, under what circumstances EU support for inter-calibration exercises in the region might be available and how it might be sought through consultations with the Marine Laboratory in Aberdeen.

5.2.1.4 The meeting agreed that the Chairpersons of the National Working Groups for the Pollution component should take further actions to identify the participating labs for the inter-calibration exercises.

5.2.2 Expert Workshop on Fate and Transport of Pollutants

5.2.2.1 This activity took place immediately prior to this meeting with the following objectives:

- Review the pollution data and information collected from China and Korea.
- Discuss and compare the available data, current understanding, and known procedures to analyse fate and transport of pollutants.
- Based on current understanding, consider and recommend some necessary actions for the SAP.

5.2.2.2 A summary of the workshop is available from the PMO.

5.2.3 Co-operative study cruises

5.2.3.1 Mr. Jiang explained that, as the summer cruise was not approved by the participating governments, the PMO will begin facilitating negotiation between the governments of Korea and China for the winter cruise.

5.2.3.2 Members noted the result of the approval for the summer joint co-operative study cruise, and will await further information from the PMO on the progress of approval for the winter cruise.

5.2.4 Visiting Scientist Programme

5.2.4.1 This activity was and still is closely tied to the co-operative study cruises. Due to the delay of the cruise, the activity was also postponed. Originally, members agreed that the visiting scientist would analyse samples from the cruise, together with his/her counterpart in the host country. Options for implementing the activity before or after the cruise were discussed.

5.2.4.2 **Members agreed that the activity should be carried out before the cruise, some time in November 2006, for inter-calibrating and agreeing on the analytical methods for the cruise samples.**

5.2.4.3 **Members also agreed that a Chinese scientist will visit Korea, probably to SSI/KORDI.**

5.2.4.4 Ms. Chiang reminded members that persons interested in being the visiting scientist should submit a proposal to the PMO.

5.2.5 Regional pollution monitoring guidelines

5.2.5.1 Mr. Wen gave a summary of his final draft report which contained:

- an overview of current monitoring programmes in China and Korea;
- the use of remote sensing for monitoring;
- recommended regional monitoring transects and observation sites;
- suggested types of sampling from different media; and
- establishing monitoring networks through the project – 1) NMEMC and NFRDI would establish a method for co-operative regional monitoring; 2) workshop to explore establishment of co-operative monitoring involving existing monitoring programmes; 3) recommendation on the establishment of the network that carries out monitoring according to the guidelines.

5.2.5.2 Mr. Wen clarified that measurements should be made in spring, summer and autumn. **He also agreed to consider including the suggestion, in his final report, of proposing some monitoring stations in the northern Yellow Sea that might offer the possibility of assessing fluxes.**

5.2.5.3 **The meeting accepted in principle, the regional monitoring guidelines with the suggested modifications that would be included in the final report.**

5.2.6 EAS Congress

5.2.6.1 The PMO explained the upcoming EAS Congress 2006 in Haikou, China, December, and that the Project and Yellow Sea Partnership plan to organise one session as the Second Partnership Meeting. The session will showcase how a partnership can extend its public awareness activities to a wider range of stakeholders, and enhance co-operation and co-ordination among the relevant activities in the Yellow Sea.

5.2.6.2 In addition, the project will also organise an exhibition booth. Members suggested that the exhibition might include displays showing nutrient distribution and change over the past 15 years, and also the impacts of pollutants on biological systems.

6 PREPARATION OF THE TDA

6.1 Mr. Bewers explained the TDA requirements from the GEF point of view, the environmental problems identified from the draft national reports and the regional syntheses, and the ways to improve the causal chain analysis for the Pollution Component (Annex V). He presented two documents relevant to the region's environmental problems and an example of a causal chain analysis (Document UNDP/GEF/YS/TDA Draft1). He indicated that the causal chain analysis should be carried out by a group of experts collectively.

6.2 A careful analysis was carried out to revise the causal chain analysis for pollution problems, so that it could be used in preparing the TDA. During the analysis, the problems were also prioritized and noted. The identified regional problems were considered, revised, and attached as Annex VI. The revised causal chain analysis is attached as Annex VII.

6.3 Members expressed their appreciation to Mr. Bewers for his hard work in leading the analysis, and for contributing his knowledge and experiences that ensured smooth discussion and agreements.

7 ACTIVITIES TO BE IMPLEMENTED FROM 2007 ONWARDS

7.1 Pollution Regional Targets and Strategic Action Programme (SAP)

7.1.1 Consideration of water quality criteria for different water-body uses
7.1.2 Regional synthesis for contaminant fate and transport – Land-based pollution, sea-based pollution, atmospheric inputs
7.1.3 Regional investment strategies for pollution control

7.1.1 There was extensive discussion on the proposed procedure to identify the management issues, the regional "targets" for the Pollution Component, and associated activities necessary for developing the SAP (Document UNDP/GEF/YS/RWG-P.3/8).

7.1.2 Members understood that:

- regional "targets" are necessary for the regional SAP as indicative targets for management actions;

- environmental quality standards exist in both participating countries, and may be used as references for the regional targets; and
- the regional target for eutrophication will depend on the situation of primary productivity in the Yellow Sea, which is the responsibility of the Ecosystem Component. A discussion session will be organised with experts from the Ecosystem and Pollution Components so that the regional targets may be identified.

7.1.3 A table of pollution problems and proposed "targets" is attached as Annex VIII.

7.2 Other Activities

7.2.1 Inter-calibration exercises for organics in sediment and biota

7.2.1.1 During the meeting, Mr. Oh obtained additional information about IAEA and QUASIMEME's current inter-calibration programmes. He informed the meeting that upon receiving the list of laboratories that are interested in participating in the inter-calibration exercise, the standard reference materials (SRMs) will be sent to each lab for the calibration, with no additional costs to the project. The price list for QUASIMEME's 2006-2007 standards are attached as Annex IX.

7.2.1.2 Mr. Bewers reiterated that he would discuss with QUASIMEME, whether and how EU support for this region might be obtained to defray the costs of inter-calibration.

7.2.1.3 Mr. Bewers also suggested that the group should consider including grain size and organic carbon in this exercise, as these measurements are important for the interpretation for sediment data, especially for contaminants.

7.2.1.4 The national group leaders agreed to re-check and confirm participating lab contact details by 15th September 2006, and pass the information to the PMO.

7.2.2 Training workshop on Assessing Marine Environment Quality

7.2.2.1 A working group was formed to discuss how this activity should be implemented. The report is attached as Annex X.

7.2.2.2 Many topics were suggested, and based on the list of topics, **members agreed that two workshops should be held next year. The first workshop shall be a cross-learning type of workshop, focusing on assessment methodologies used and how assessment can influence policies on eutrophication and marine litter reduction. The second workshop will focus on phytotoxin training, with possible support from IAEA MEL (Annex X).**

7.2.3 Suggestions for other activities

7.2.3.1 There were no further suggestions for additional activities to be implemented.

8 WORKPLAN FOR 2007

8.1 Based on the activities discussed during the course of the meeting, members created and agreed on a workplan for 2007, for submission to the PSC (Annex XI).

9 OTHER BUSINESS

9.1 The Chairperson invited members to raise any other issues that needed to be considered by this meeting.

9.2 Mr. Yao Ziwei asked about a second round of inter-calibration for organics and metals, should the first round results prove unsatisfactory for any lab. Mr. Oh replied that all labs could join any of the annual international inter-calibration exercises organised by IAEA MEL, if these institutions wished to do so.

10 DATE AND PLACE FOR 4TH RWG-POLLUTION MEETING

10.1 The Chairperson invited members to consider the date and place for the 4th RWG-P Meeting.

10.2 Members agreed to have the Fourth RWG-P Meeting in Jeju, Korea from 11-14 October 2007.

11 ADOPTION OF THE MEETING REPORT

11.1 The Chairperson led the discussion of the draft meeting report. The report was reviewed, amended, and adopted by the Meeting.

12 CLOSURE OF THE MEETING

12.1 In closing, Mr. Wen gave a summary of the meeting, mentioning that the data & information collection and regional data synthesis activities were near completion, the national reports would be improved based on the suggestions from the meeting, the regional monitoring guidelines would be finalised this month, the Visiting Scientist Programme would be carried out in two month's time, the inter-calibration exercises for sediment and biota would soon begin, and workshops on marine environment quality assessment and phytotoxins would be carried out next year. Mr. Wen was pleased to note that the TDA would be completed before the end of the year, and commended the TDA consultant for helping the group to finalise the causal chain analysis.

12.2 Mr. Jiang thanked all participants for their hard work, and the local host for the wonderful meeting and field trip arrangements.

12.3 Mr. Bewers commended the Chairperson and the PMO for their excellent jobs in facilitating the meeting to smoothly achieve the objectives.

12.4 Mr. Oh expressed his pleasure in working with the members over the past years, and was sorry to be moving to his new job. He stated that he would continue to keep in touch with the members, and looked forward to co-operation in the future.

12.5 On behalf of the Chinese members, Mr. Huo Chuanlin stated that he enjoyed working on the Project with Mr. Oh and all the Korean members. He looked forward to working with the new Korean leader, Mr. Shin, and hoped to continue collaborative efforts with Mr. Oh.

12.6 Following the closing statements, the Chairperson declared the meeting closed at 10:30 A.M. on 7th September 2006.

Annex I

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Annex II

List of Documents

Working Documents

UNDP/GEF/YS/RWG-P.3/1	Provisional Agenda
UNDP/GEF/YS/RWG-P.3/2	Annotated Provisional Agenda
UNDP/GEF/YS/RWG-P.3/3	Report of the Meeting *(to be prepared at the meeting)*
UNDP/GEF/YS/RWG-P.3/4	Expected Outputs From the 3rd RWG-P Meeting
UNDP/GEF/YS/RWG-P.3/5	National Data and Information Collection Activity – Final Reports
UNDP/GEF/YS/RWG-P.3/6	Report of Pollution Regional Data Synthesis
UNDP/GEF/YS/RWG-P.3/7	2006 Completed and On-going Activities of the Pollution Component
UNDP/GEF/YS/TDA Draft1	First Draft of the Transboundary Diagnostic Analysis (TDA)
UNDP/GEF/YS/RWG-P.3/8	Proposed Regional Targets for Management of Marine Pollution in the Yellow Sea
UNDP/GEF/YS/RWG-P.3/9	Pollution Component Activities for 2007 and Onwards
UNDP/GEF/YS/RWG-P.3/10	Pollution Component's Workplan for 2007

Information Documents

UNDP/GEF/YS/RWG-P.3/inf.1	Provisional List of Documents
UNDP/GEF/YS/RWG-P.3/inf.2	Provisional List of Participants
UNDP/GEF/YS/RWG-P.3/inf.3	Provisional Working Programme for the Meeting
UNDP/GEF/YS/RWG-P.2/3	Report of "Second Meeting of the Regional Working Group for the Pollution Component"
UNDP/GEF/YS/RSP.2/3	Report of the "Second Meeting of the Regional Scientific and Technical Panel"
UNDP/GEF/YS/PSC.2/3	Report of the "Second Meeting of the Project Steering Committee"
UNDP/GEF/YS/JC.2/3	Report of "Second Technical Meeting for the Co-operative Study Cruises In the Yellow Sea Marine Basin for the UNDP/GEF Yellow Sea Project"

UNDP/GEF/YS/JC.3/3	Report of “Third Technical Meeting for the Co-operative Study Cruises In the Yellow Sea Marine Basin for the UNDP/GEF Yellow Sea Project”

Annex III

Agenda

1. OPENING OF THE MEETING

1.1 Welcome Addresses
1.2 Introduction of Members

2. ORGANISATION OF THE MEETING

2.1 Documentation Available to the Meeting
2.2 Organisation of Work

3. ADOPTION OF THE MEETING AGENDA

4. EXPECTED OUTPUTS FROM THE 3RD RWG-P MEETING

5. REVIEW OF COMPLETED AND ON-GOING POLLUTION COMPONENT ACTIVITIES

5.1 Data and Information Status, Trends and New Findings
5.1.1 National data and information collection
5.1.2 Regional data and information synthesis

5.2 Other Activities
5.2.1 Inter-calibration exercises for nutrients in seawater
5.2.2 Expert Workshop on Fate and Transport of Pollutants
5.2.3 Co-operative study cruises
5.2.4 Visiting Scientist Programme
5.2.5 Regional pollution monitoring guidelines
5.2.6 EAS Congress

6. PREPARATION OF THE TDA

7. ACTIVITIES TO BE IMPLEMENTED FROM 2007 ONWARDS

7.1 Pollution Regional Targets and Strategic Action Programme (SAP)
7.1.1 Consideration of water quality criteria for different water-body uses
7.1.2 Regional synthesis for contaminant fate and transport – Land-based pollution, sea-based pollution, atmospheric inputs
7.1.3 Regional investment strategies for pollution control

7.2 Other Activities
7.2.1 Inter-calibration exercises for organics in sediment and biota
7.2.2 Training workshop on Assessing Marine Environment Quality
7.2.3 Suggestions for other activities

8. WORKPLAN FOR 2007

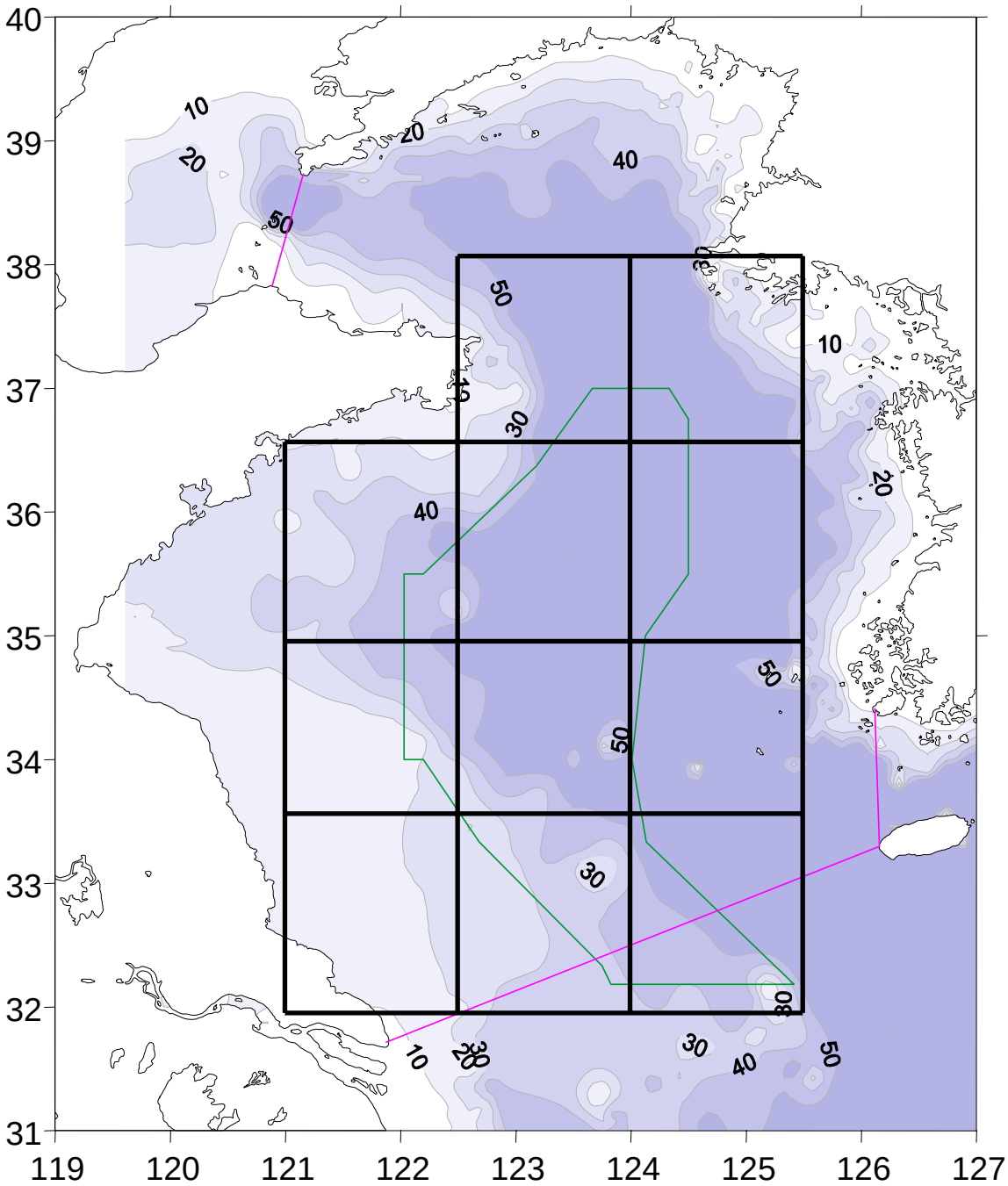
9. OTHER BUSINESS

10. DATE AND PLACE FOR 4TH RWG-POLLUTION MEETING

11. ADOPTION OF THE MEETING REPORT

12. CLOSURE OF THE MEETING

Annex IV – Rectangular Partitioning for Pollution Data Presentation



Annex V

Transboundary Diagnostic Analysis (TDA)

Presentation to YSLME

Regional Working Groups

on

Transboundary Diagnostic Analysis

Mike Bewers

September 2006

Transboundary Diagnostic Analysis (TDA)

Purpose of a TDA

Specify options for intervention to address transboundary problems in the Yellow Sea.

Options for intervention identified in the TDA are used as a basis for selection of interventions in the Strategic Action Plan (SAP).

Transboundary Diagnostic Analysis (TDA)

CONDUCTING A TDA IS THE FIRST STEP IN BUILDING STAKEHOLDER OWNERSHIP AT THE NATIONAL LEVEL

TDA provides a sound scientific basis for action that must be fully understood by all stakeholders

Transboundary Diagnostic Analysis (TDA)

Structure and Content of a TDA

1. Characterization of environmental problems;
2. Identification of priorities among problems;
3. Identification of the causes of problems; (causal chain analysis)
4. Ranking of causes;
5. Discriminating between domestic (national) and transboundary problems; and
6. Identification of options for management intervention to mitigate or resolve problems.

Transboundary Diagnostic Analysis (TDA)

TDA Preparation

1. Is conducted primarily from technical and scientific perspectives;
2. May need some socio-economic expertise but does *not* normally require policy-level involvement; and
3. All policy-level considerations are dealt within the Strategic Action Plan (SAP).

Transboundary Diagnostic Analysis (TDA)

Actions required by Working Groups

- The characterization of environmental problems;
- The completion of a causal chain analysis for each problem; and
- The identification of options for management intervention.

Transboundary Diagnostic Analysis (TDA)

Characterization of Environmental Problems

Each problem must be described and characterized in terms of its adverse effects.

Based on the data and information assembled, this should include the nature of the problem and, where possible, quantify its impact in socio-economic terms *e.g.* loss of jobs, loss of production, loss of tourism income.

Quantification of impact in monetary terms assists the priority ranking of problems.

Transboundary Diagnostic Analysis (TDA)

Domestic versus Transboundary

If the problem arises in the waters of a single country and is caused wholly by activities or sources within that country, the problem is a **domestic problem**.

If the problem lies in **international** waters or in the waters under the jurisdiction of a country other than that in which the causes arise, the problem is a **transboundary problem**.

Transboundary Diagnostic Analysis (TDA)

A Causal Chain Analysis is

Unidirectional and starts from the identified environmental issue and/or problem

Identifies the causes of each problem in a sequence from the most immediate to the more fundamental causes

Moves from the environmental (natural sciences) domain through the chain of cause and effect to the “root” cause that frequently lies in the social, cultural and economic domain

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

Environmental Problem	Adverse Effects	Causes				Root Cause

1 2 3 4

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

Environmental Problem						
Eutrophication in coastal areas						

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

Environmental Problem	Adverse Effects					
Eutrophication in coastal areas	Fish mortality; oxygen depletion, excessive primary production, interference with beach amenities and odours resulting from the decay of organic matter					

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

	Adverse Effects	Immediate Cause (1st level)				
	Fish mortality; oxygen depletion, excessive primary production, interference with beach amenities and odours resulting from the decay of organic matter	Excessive rates of release of nutrients from local industry				
		Excessive discharge of partially treated sewage into nearshore areas				

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

		Immediate Cause (1st level)	Secondary Cause (2nd level)			
		Excessive rates of release of nutrients from local industry	Poor control and regulation of fertilizer industry			
		Excessive discharge of partially treated and untreated sewage into nearshore areas	Poor maintenance of urban sewage treatment facilities			
			Inadequate capacity for sewage treatment			

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

			Secondary Cause (2nd level)	Tertiary Cause (3rd level)		
			Poor control and regulation of fertilizer industry	Inadequate enforcement of existing government policy and legislation relating to industries		
			Poor maintenance of urban sewage treatment facilities	Inadequate enforcement of regulations on discharges from sewage treatment facilities		
			Inadequate capacity for sewage treatment	Insufficient expansion of sewage treatment facilities in response to population increases		

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

				Tertiary Cause (3rd level)	Quaternary Cause (4th level)	
				Inadequate enforcement of existing government policy and legislation relating to industries		
				Inadequate enforcement of regulations on discharges from sewage treatment facilities		
				Insufficient expansion of sewage treatment facilities in response to population increases	Poor forward planning by central government and provincial authorities and municipalities	

Transboundary Diagnostic Analysis (TDA)

Hypothetical Causal Chain

					Quaternary Cause (4th level)	Root Cause
						Inadequate compliance monitoring and enforcement by government and provincial agencies
						Inadequate compliance monitoring and enforcement by government and provincial agencies
					Poor forward planning by central government and provincial authorities and municipalities	Inadequate legislative basis for ensuring appropriate infrastructure for urban areas

Transboundary Diagnostic Analysis (TDA)

Environmental Problem	Adverse Effects	Immediate Cause (1st level)	Secondary Cause (2nd level)	Tertiary Cause (3rd level)	Quaternary Cause (4th level)	Root Cause
Eutrophication in coastal areas	Fish mortality; oxygen depletion, excessive primary production, interference with beach amenities and odours resulting from the decay of organic matter	Excessive rates of release of nutrients from local industry	Poor control and regulation of fertilizer industry	Inadequate enforcement of existing government policy and legislation relating to industries		Inadequate compliance monitoring and enforcement by government and provincial agencies
		Excessive discharge of partially treated and untreated sewage into nearshore areas	Poor maintenance of urban sewage treatment facilities	Inadequate enforcement of regulations on discharges from sewage treatment facilities		Inadequate compliance monitoring and enforcement by government and provincial agencies
			Inadequate capacity for sewage treatment	Insufficient expansion of sewage treatment facilities in response to population increases	Poor forward planning by central government and provincial authorities and municipalities	Inadequate legislative basis for ensuring appropriate infrastructure for urban areas

Interventions can be applied at any level of cause

Transboundary Diagnostic Analysis (TDA)

Steps to be taken

1. Consider the list of environmental problems and revise the list as appropriate;
2. Summarize the nature of the problem, where it occurs and its severity;
3. Conduct a causal chain analysis for each problem;
4. Consider the options for intervention for each cause in the causal chain and
5. Summarize the advantages and disadvantages for each intervention.

Annex VI – Problems Relating to Pollution (RWG-P)

Subject Areas: Water Quality, Eutrophication and Risks to Human Health	Regional Working Group			
	Biodiversity	Ecosystem	Fisheries	Pollution
Eutrophication				**X**
Nitrogen enrichment – 1*				**X**
Phosphorus enrichment				**X**
Silicate depletion – 2				**X**
Changed Si:N:P ratios				**X**
Oxygen depletion – X				**X**
Phytoplankton blooms including red tides - X				**X**
Contamination and Effects (Pollution)				**X**
Faecal contamination – 1				**X**
Heavy metal contamination				**X**
Changes in sediment fluxes and mobilization - X				**X**
POPs contamination				**X**
PAH contamination - 2				**X**
Marine litter				**X**
Increased risks to human health				**X**
- through seafood contamination				**X**
- through exposures to contaminated water				**X**

* Numbers after each problem denote the priority ranking of the problem, with lower number representing higher priority. "X" denotes not a problem for RWG-P to consider.

Annex VII - Revised Causal Chain Analysis for Pollution Problems in the Yellow Sea

	Problem	Sources	Primary Cause	Secondary Cause	Tertiary Cause	Quarternary Cause
Eutrophication						
	Nitrogen enrichment (1)	sewage discharge (untreated and treated)	no tertiary sewage treatment	little attention to the capacity of YS to absorb N	no quantitative knowledge of capacity of system to absorb N	not enough research carried out
			inadequate urban sewage treatment capacity	Korea - limited investment in urban infrastructure	inadequate investment in reseach & limited incorporation of environmental concerns into govt policy	limited influence of environmental constituency on govt
				China - rapidly increasing urban populations		
			inadequate storm water drainage / separation of sewage and stormwater systems	cost of separating storm and sewage water in long established urban areas	insufficient health damage to justify such major investment; no quantitative knowledge of capacity of system to absorb N	
				where separation exists, it is frequently overwhelmed by major storm events		
		chemical industry	limited assurance of compliance with existing standards and regulations	inadequate govt compliance assurance system	inadequate attention by govt to ensuring regulations are complied with	limited influence of environmental constituency on govt
			inadequate attention to the capacity of receiving waters to absorb N	limited incentives for industry to abide by govt regulations	limited stakeholder involvement in industrial activities	
		mariculture	density of mariculture exceeds capacity to absorb N (compounded by over feeding of stock)	lack of recognition of system to absorb nutrient releases	weak govt regulatory system	limited influence of environmental constituency on govt
				market demand exceeds environmental consideration	weak govt regulatory system	limited influence of environmental constituency on govt

	Problem	Sources	Primary Cause	Secondary Cause	Tertiary Cause	Quarternary Cause
		agriculture - arable farming	over use of fertilizer on crops	lack of labor for proper application;;	migration of rural population to urban centers because of opportunity	
				lack of knowledge of proper application	insufficient govt requirements for farmer training	
				Korea - undue incentives for increased production of non-rice crops with limited farmer understanding	Korea - attempts to reduce imports of food stuffs	improve self sufficiency
				China - undue incentives for fertilizer use	China - attempts to improve balance between supply and demand for agricultural products	
			absence of buffer zone to absorb N before run-off	no consideration of buffer zone for nutrient assimilation	no recognition of problem at national levels	
		agriculture - animal husbandry	leakage of animal wastes into fresh waters	absence of buffer zone to absorb N before run-off		
				lack of treatment of animal wastes	lack of compliance assurance	
		Nox emission from vehicles	massive increase in # of vehicles	substantial increase in standard of living	massive economic development	
	silicate depletion (2)	retention of Si behind freshwater dams	construction of dams on major rivers draining into YS	freshwater and power production to support economic development		
Contamination and Effects (Pollution)						
	faecal contamination (1)	discharge of human sewage	inadequate urban sewage treatment capacity	Korea - limited investment in urban infrastructure	limited incidents of diesase caused by seafood consumption	
				China - rapidly increasing urban populations		

	Problem	Sources	Primary Cause	Secondary Cause	Tertiary Cause	Quarternary Cause
	PAH contamination (2)	shipping emission	increase in # and size of vessels	limited compliance with MARPOL Convention		
		power generation	limited use of atmospheric scrubbers			
		oil spills	increased maritime traffic			
		oil refinery	increased consumption of oil			
		steel production				
		home heating	limited use of renewable energy sources for home heating purposes			
		diesel engines				
		road paving				
	heavy metal contamination	releases of metals from industry	inadequate compliance assurance with existing regulations			
	Cd Pb Zn Cu Hg Cr		limited consideration of receiving capacity of environment	no quantitative knowledge of capacity of system to absorb metals	limited research carried out	
		releases of metals from vehicles	limited restrictions in metals releases from transport	no justification for increased controls associated with blood Pb levels		
		long distance transport from other areas	emissions to atmosphere in other regions of the world	no jurisdictional influence except in international conventions		
	PCBs contamination	incineration of solid wastes	inadequate segregation of wastes	inadequate waste management practices		
	consult national actions plans on Stockholm Convention		uncontrolled combustion without scrubbing	inadequate waste management practices		

Annex VII - Revised Causal Chain Analysis for Pollution Problems in the Yellow Sea

	Problem	Sources	Primary Cause	Secondary Cause	Tertiary Cause	Quarternary Cause
		release of used transformer oils	inadequate facilities for decommissioning transformers and capacities			
		steel industry				
		pulp and paper industry				
	marine litter	land-based sources	inadequate solid waste management	lack of appreciation that marine litter is a problem		
			public / tourist habits	poor public education		
			carriage of material by floods and storms			
		marine-based sources	discard of fishing gear	lack of fishermen education on marine litter as a problem		
			discard of solid waste	lack of fishermen education on marine litter as a problem		
	highlighted areas = further action needed					
Numbers after each problem denote the priority ranking of the problem, with lower number representing higher priority						

Annex VIII - Proposed Regional "Targets"

	Problem	Direction (next 10-15 yrs)	"Target"	Actions for RWG-P (if no target)
Eutrophication				
	Nitrogen enrichment	reduce		get primary production values from RWG-E; joint meeting with RWG-E members
	Phosphorus enrichment	no change		
	Silicate depletion		try to adjust freshwater fluxes	
	Changed Si:N:P ratios	refer to above		
	Oxygen depletion	refer to above		
	Phytoplankton blooms including red tides	refer to above		
Contamination and Effects (Pollution)				
	Faecal contamination	reduce	incidents of exposure reduced to nationally accepted level	
	Heavy metal contamination	reduce or no action	codex alimentaris - for all foodstuffs	
	PCBs, pesticides, dioxins, furans contamination	reduce	Stockholm Convention	
	PAH contamination	reduce	codex alimentaris - for all foodstuffs	
	Marine litter	reduce	as minimal as possible	
	TBT	control release from dredging activities; survey sediment erosion areas	[2pg/l - need to be checked]	
	petroleum hydrocarbons	reduce	MARPOL Convention - need to be checked	
Increased risks to human health				
	through seafood contamination	reduce	codex alimentaris - for all foodstuffs	
	through exposures to contaminated water	reduce	incidents of exposure reduced to nationally accepted level	
	shaded targets require further checking of the internationally accepted standards			

Annex IX - Cost of Subscription for QUASIMEME Inter-calibration Exercise

Orders received before 30 November 2006 for the 2006-2007 Quasimeme year will be charged using the pricing structure given below. The Cost include:

- The test materials
- Shipment to your laboratory
- Replacement of test materials through breakage or loss in transit
- Quasimeme helpdesk
- Assessment of data
- Access to the interactive Quasimeme website
- Electronic copies of reports
- Invitation to Quasimeme workshops at preferential registration fees
- Copy of the Quest program for data entry

Costs for the Quasimeme Laboratory Performance Studies

Group number	Costs per group (€)	Group number	Costs per group (€)
AQ-1 Nutrients in seawater	525	BT-2 Organics in biota	615
AQ-2 Nutrients in estuarine water and low salinity open water	610	BT-3 Non-ortho CBs, PCDFs & PCDDs in biota	615
AQ-3 Trace metals in seawater	625	BT-4 PAH in shellfish	615
AQ-4 Mercury in seawater	530	BT-5 Toxaphene in biota	545
AQ-5 Organochlorines in seawater	385	BT-7 Amnesic Shellfish Poisoning Toxins in biota	745
AQ-6 Volative organochlorines in seawater (VOCs)	385	BE-1 Imposex and intersex in marine snails	615
AQ-8 Triazines and	385	BS-1 Brominated Flame	615

Group number	Costs per group (€)	Group number	Costs per group (€)
organophosphorus compounds in seawater		Retardands (previously DE-8)	
AQ-11 Chlorophyll a in seawater	675	DE-3 Organotins in biota	745
MS-1 Trace metals in sediment	545	DE-5 Organotins in seawater	745
MS-2 Chlorinated organics in sediment	545	DE-7 Organotins in sediment	745
MS-3 PAH in sediment	545	DE-10 Diarrhetic Shellfish Poisoning Toxins	745
BT-1 Trace metals in biota	615		

Purchase of certified solutions

Chlorobiphenyls and Organochlorine Pesticides

Standard solution QOR01CA Chlorobiphenyls in ISO-OCtane
Standard solution QOR02CA Chlorobiphenyls in ISO-Octane
Standard solution QOR03CA Organochlorine Pesticides in ISO-Octane

these calibration solutions are available through QUASIMEME. If you would like to place an order, please complete the form and fax it to the QUASIMEME Project Office. The information is available as downloadable Portable Document Files (pdf) which can be read using the Adobe Acrobat Reader. If you do not have access to the Adobe Acrobat Reader you may download it from http://www.adobe.com/acrobat.

Download order form here

Organotin Calibrants can be ordered at the Institue for Environmental Studies (IVM). Contact is Jan Willem Wegener
Deuterated TBT can be ordered at the C/D/N Isotopes Canada
Reference materials can also be purchased at Christiaan Nicolaas Schmidt.BV

and Chiron AS

Annex X - Report of Working Group on Training Workshops for 2007

A. Assessing Marine Environment Quality

1. Objectives

The objectives of the training workshop are to promote the capability in the YS region for assessment of marine environmental quality, which includes:

- Understanding the methodologies for general (integrated) assessment of marine environmental quality
- Understanding the methodologies for assessment of marine eutrophication
- Understanding the pollution control policy for reduction of eutrophication in the YS region
- Understanding the assessment standards or criteria used in the countries in YS region

2. Workshop Topics

The topics of the workshop are as follows:

(1) Assessment methodologies

- Methodologies for assessment of marine environmental quality (involving water quality assessment, organism quality assessment, and sediment quality assessment, etc.)
- Introduction on standards or criteria for assessment of marine environmental quality
- Hazardous substance

----name list of hazardous substance
----eco-toxicity value of substance of concerns)

- Tracing monitoring of offshore dumping
- Monitoring and assessment of recreational waters

(2) Eutrophication and related policies

- Methodologies for assessment of marine eutrophication, with reference to YS eutrophication assessment (involving classification criteria, indicators and methods)
- Pollution control policy for reduction of eutrophication

(3) Case studies

- Case study in Korea
- Case study in China
- Case study in other countries

3. Target Participants

The target participants for this workshop involve the scientists working on monitoring and assessment fields from the research and/or monitoring organizations (institutes, monitoring centers and/or universities) and the officers from the administration agencies and local governments.

4. Collaboration with other institutes/regional programs

The collaboration will be searched for with such organizations as NMEMC of China, NFRDI of Korea, and APEC METEC, and also with such programs such as PEMSEA training programs, NOWPAP regional training programs, and APEC METEC training programs, etc.

5. Size, duration, approximate dates, and venue for workshop

The workshop would be held in July to August of 2007 (some experts from universities are just in vacation) in 2-3 days. 28 participants would be invited, including 14 from governments and 14 from the research and/or monitoring organizations, from ROK and China.

B. Training Workshop on Phytotoxin Analysis

1. Objectives

The objectives of the training workshop are to promote the capability in the YS region for the assessment of phytotoxins, which includes:

- Understanding the possible pathways of seafood contamination by HABs toxins
- Understanding the analytical methods of phytotoxins
- Understanding the mechanism of phytotoxin poisoning
- Establishment of reference labs in the YS region

2. Workshop Topics

The topics of the workshop are as follows:

(1) Analytical methods
Mouse Bioassay (MBA)
Receptor Binding Assay (RBA)

(2) Phytotoxin poisoning and related policies
Policy for reducing human health effects
Establishment of reference labs in the YS region

(3) Case studies
Case study in China
Case study in Korea
Case study in other countries

3. Target Participants

The target participants for this workshop involve the scientists working on monitoring and assessment fields from the research and/or monitoring organizations (institutes, monitoring centers and/or universities).

4. Collaboration with other institutes/regional programs

The collaboration will be searched for international organizations like IAEA MEL and FAO. NMEMC and FIO of China and NFRDI and AMETEC of Korea are possible organizations for collaboration.

5. Size, duration, approximate dates, and venue for workshop

The workshop would be held in the 2nd half of 2007.

Annex XI - Pollution Component Workplan for 2007

Activity	Action	Timeline / Deadline
National Reports, Regional Synthesis, TDA		
	1. Improve national reports	10-Oct-06
	2. Regional distribution charts to regional synthesis consultant	10-Oct-06
	3. Regional Synthesis Report to TDA consultant	25-Oct-06
	3. Draft TDA	Early Nov 06 (8th Nov latest)
	4. RSTP / PSC meetings	20 - 25 Nov 06
	5. PMO publishes reports	Mar-07
Intercalibration:		
Nutrients in seawater round 2		Aug 06 to Feb 07
Organics and metals in sediment & biota	1. National leaders to confirm participating lab details	15-Sep-06
	2. Implement exercise	September 06 to September 07
Summary workshop on inter-calibration	1. PMO will arrange	8-9 Oct 07
Visiting Scientist	1. Chinese scientist to provide proposal to PMO	30-Sep-06
	2. Visit	Nov 06
EAS congress	1. PMO will arrange	Dec 12-15 2006
	2. National data collectors provide nutrient distribution map to PMO	10-Oct-06
SAP Consultation	1. PMO will arrange	1st quarter 2007
Joint meeting with RWG-E	1. PMO consult with RWG-E during 3rd RWG-E meeting and RSTP meeting	subject to discussion with RWG-E
Capacity Building Workshops		
Assessment Methodology Workshop	1. PMO will arrange	July to August 2007
Phytotoxin Training Workshop	1. PMO will arrange	July to August 2007
4th RWG-P Meeting	1. PMO will arrange	11-14 Oct 07

List of Acronyms

AMETEC	APEC Marine Environmental Training and Education Center
APEC	Asia-Pacific Economic Cooperation
ASP	amnesic shellfish poisoning
DIN/RAC	Data Information Network / Regional Activity Center
DSP	diarrhetic shellfish poisoning
FAO	Food and Agriculture Organisation of the United Nations
HAB	harmful algal bloom
IAEA	International Atomic Energy Agency
IAEA MEL	IAEA Marine Environment Laboratory
EU	European Union
GEF	Global Environment Facility
NFRDI	National Fisheries Research and Development Institute - Korea
NMEMC	National Marine Environmental Monitoring Center - China
NOWPAP	Northwest Pacific Action Plan
PAH	polycyclic aromatic hydrocarbons
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PMO	Project Management Office
POP	persistent organic pollutants
PSC	Project Steering Committee
PSP	paralytic shellfish poisoning
QUASIMEME	Quality Assurance of Information in Marine Environmental Monitoring
ROK	Republic of Korea
RSTP	Regional Scientific and Technical Panel
RWG-P	Regional Working Group – Pollution
SAP	Strategic Action Programme
TDA	Transboundary Diagnostic Analysis
UNDP	United Nations Development Programme
WG	working group