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

UNDP/GEF/YS/RWG-P.4/3
Date: 13 October 2007
English only

Fourth Meeting of the Regional Working Group for the Pollution Component
Jeju, Republic of Korea, 11 - 13 October 2007

Meeting Report

TABLE OF CONTENTS

ANNEXES

1 OPENING OF THE MEETING

1.1 Welcome addresses

1.1.1 On behalf of the UNDP/GEF Yellow Sea Project, Ms. Connie Chiang, Environment Officer, opened the meeting and welcomed the members of the Regional Working Group-Pollution (RWG-P) to Jeju.

1.1.2 Ms. Chiang gave an update of project progress, namely the completion and publication of the TDA, SAP progress and development, and stated that this meeting would focus on the remaining tasks needed to finalise the SAP.

1.1.3 Mr. Wen Quan, Chairperson of the RWG-P, welcomed all participants to Jeju, and mentioned that a lot of work is needed to be done over the next few days, to review the SAP regional targets, management actions, and propose some demonstration activities.

1.2 Introduction of members

1.2.1 Members 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 Documents Available to the Meeting

2.1.1 Mr. Wen invited the Secretariat (Project Management Office) to introduce this agenda item. Ms. Chiang introduced the meeting's working and information documents prepared by the PMO (Document UNDP/GEF/YS/RWG-P.4/inf.1). She informed the meeting that all the working documents were sent to the members of the RWG-P, and made available on the project website. The list of documents is attached as Annex II.

2.2 Organisation of Work

2.2.1 Mr. Wen invited the Secretariat to present the provisional working programme for the meeting (Document UNDP/GEF/YS/RWG-P.4/inf.3). Ms. Chiang 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.4/1) and Provisional Annotated Agenda (Document UNDP/GEF/YS/RWG-P.4/2) prepared by the PMO.

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

4 EXPECTED OUTPUTS FROM THE 4TH RWG-P MEETING

4.1 The Chairperson invited the Secretariat to present the expected outputs of the meeting (Document UNDP/GEF/YS/RWG-P.4/4). Ms. Chiang presented the list of expected outputs to be achieved from this meeting, provided some details for each agenda item's objective, and reiterated that the meeting would focus on considering the actions needed to finalise the SAP.

4.2 The members noted the expected outputs presented by the Secretariat.

5 REVIEW OF COMPLETED AND ON-GOING POLLUTION COMPONENT ACTIVITIES

5.1 First Yellow Sea Regional Science Conference

5.1.1 Ms. Chiang was invited to report on this event that took place in August, and provided a summary of the conference, the topics contained in the presentations, the poster session, and the Conference Summary given at the end of the conference. She mentioned that participants were asked to contribute ideas for:

- future directions in management of the physical, chemical and biological environments;
- enhancement of cultural services; and
- incorporation of legislative, political and institutional issues into management.

Some of these ideas were considered and incorporated by the SAP Ad-hoc Working Group as possible management actions to be included in the SAP, which members were requested to review in Agenda 6.

5.1.2 Mr. Wen also informed the members of some of the contents of the oral and poster presentations including nutrient loading, monitoring using ferries, atmospheric inputs into the Yellow Sea related to land use, N/P/Si relationship, ocean colour algorithm development, future co-operation, and long-term co-operative surveys.

5.2 Inter-calibration Exercises for Trace Metals and Organics

5.2.1 Ms. Chiang updated the members on this activity that was currently taking place, and would be completed in December. She informed the meeting that IAEA-MEL had been contracted to co-ordinate the activity, and had sent the CRMs and samples to participating labs (4 in China and 6 in ROK) in May 2008. Labs were expected to complete their analyses by August 2008, but a few labs still hadn't submitted results.

5.3 Inter-calibration Summary Workshop

5.3.1 Ms. Chiang reported on this activity that took place directly before the meeting. It provided an opportunity for all labs participating in the inter-calibration exercises (nutrients, metals, organics) to:

- review the results from the 2 rounds of nutrients in seawater exercises;
- review the results-to-date from the metals and organics in sediment and biota exercises;

- exchange information on each lab's standard operating procedure, such as method for validating data, precision data, repeatability, reproducibility, bias, uncertainty, etc.;
- exchange information on QC methods used in analysis, e.g. What calibration standards were used? What control samples were used? How often were replicates measured? What types of quality control charts were used to monitor the various QC measures? What are the acceptance criteria for each of the QC measures? and
- exchange ideas on improving analytical skills.

5.3.2 Members engaged in some discussion on future actions for the inter-calibration exercises. The following were suggested/informed:

- Hold future exercises at the institution that produced good results.
- Arrange future exercises in the form of a training workshop to improve techniques and help harmonisation of analyses.
- Labs that had submitted results in the early rounds should be invited to participate in future rounds. It was also suggested that additional labs should be invited to participate in future rounds.

5.3.3 Mr. Wen noted that information on the two rounds of nutrients exercises were not included in the meeting documents for this agenda. The PMO informed the meeting that that the summary report of the activity was available. The summary results-to-date of the metals and organics exercises were also available, should any member wish to have them.

5.3.4 Members provided their ideas on implementation of future inter-calibration exercises during Agenda 7, and the decisions are summarised under that agenda.

6 PREPARATION OF THE SAP

6.1 SAP Consultation & SAP Ad-hoc Meetings

6.1.1 The Chairperson invited Ms. Chiang to present the progress of SAP development that started with a Consultation Meeting in February 2007, and two Ad-hoc Working Group meetings throughout 2007, consisting of some regional experts and the PMO. She reported on the outcomes from these meetings, and explained what the RWG members should produce from this agenda:

- clarification of the regional targets;
- finalisation of management actions;
- technical feasibility studies; and
- suggestions for potential demonstration activities.

6.1.2 Ms. Chiang also informed the meeting that NYSAPs are the responsibility of the countries, and would be co-ordinated by the NPCs; thus, it would not be discussed here. However, members should be prepared to be called upon to contribute their expertise to the activity.

6.2 Regional Targets & Proposed Management Actions

6.2.1 Members reviewed the regional management targets proposed from the two SAP Ad-hoc Working Group Meetings. There was some discussion on the wording for the

targets related to international conventions, marine litter, and bathing beaches. **Following clarification on what the targets should express and the situation in both countries, the targets were revised and agreed as follows:**

- **Meet requirements in *Codex alimentarius* / Stockholm Convention / MARPOL**
- **Reduction of total loading from point sources from 2006 levels (China will reduce total N loading from point sources 10% from 2006-2010)**
- **Improve freshwater seasonal fluxes***
- **Reduce standing stock of litter from current level (Increase public awareness; periodic clean ups)***
- **Reduce contaminants, particularly in bathing beaches and other marine recreational waters, to nationally acceptable levels.**

6.2.2 Members then split into two groups to review the management action table produced during the 2nd SAP Ad-hoc Working Group Meeting. Upon returning to the plenary, members provided additional input to finalise the table, and re-worded some of the actions to make them clearer to all readers. There was some discussion on how to increase freshwater fluxes, balancing N:P:Si and actions to reduce automobile emissions.

6.2.3 **Members agreed on the following:**

- **Delete the regional target, "improve freshwater seasonal fluxes," and the action to adjust freshwater flux, as this is very difficult to do. The associated action on monitoring and assessing N:P:Si was combined with the other actions for the target on reduction of total loading.**
- **Actions to reduce automobile emission were deleted as this was not considered a major source of contaminants.**

6.2.4 **The agreed management action table for the Pollution Component is attached as Annex IV.**

6.3 Feasibility Studies

6.3.1 The technical feasibility for the management actions was carefully studied, and the results are shown in Annex IV.

6.4 Potential Demonstration Sites

6.4.1 The Chairperson invited the Secretariat to explain the tasks of this agenda. Ms. Chiang explained that the group should provide guidance on the actions that they wish to demonstrate. She also informed the meeting of the timeline for the demonstration activities, the procedure in which the activities would be evaluated, selected, and implemented, and that suggestions for demonstration activities should be those that can be demonstrated in 12 to 18 months.

* Asterix denotes no change from the target's original wording.

6.4.2 Following questions from the participants, Ms. Chiang clarified that the members should provide a list of activities to demonstrate the usefulness and effectiveness of the identified management actions. The activities should address the target and show that certain actions can result in improved ecosystem health. Furthermore, a brief description of each activity, and the associated actions should be provided. The outputs of the 4th RWG-E Meeting were provided as guidance.

6.4.3 Members reviewed the management action table and shortlisted some actions to demonstrate, and gave details on the expected outputs and methodology to implement each activity. There was some discussion on whether the activities should be prioritised, and after some deliberation, it was agreed to do so. **The agreed proposed six shortlisted actions to demonstrate are attached as Annex V.**

6.5 Remaining Tasks, Including National Yellow Sea Action Plan (NYSAP) Preparation

6.5.1 Ms. Chiang reported on the relevant activities for NYSAP preparation when introducing this agenda. The meeting noted the information provided.

7 ACTIVITIES TO BE IMPLEMENTED FROM 2008 ONWARDS

7.1 Workshop on Assessing Marine Environment Quality

7.1.1 Ms. Chiang was invited to report on this activity's implementation which had been delayed due to a lack of persons bidding for the "Call for Proposals." The Chairperson stated that NMEMC was interested in organising this event, and Ms. Wang Juying presented a proposal for the 2-day workshop, scheduled for May 2008, in Shenyang, China. The major objectives of the workshop would be:

- Understanding of methodologies for assessing marine environmental quality; and
- Eutrophication assessment and classification criteria.

7.1.2 Ms. Choi Hee-gu agreed to serve on the workshop organising committee.

7.1.3 Mr. Wen suggested that a proceedings be issued for the workshop with participants submitting their extended abstract of least 2-3 pages including tables and figures.

7.1.4 NMEMC agreed to arrange for translators during the workshop, produce the workshop proceedings as suggested, and submit a more detailed proposal to the PMO detailing the workshop activities and estimated budget. PMO agreed to assist in identifying Korean-English translators.

7.2 "Level 2" Capacity Building, e.g. AMETEC Training

7.2.1 Ms. Chiang explained that the project had not been involved in AMETEC trainings although some discussion had taken place, and KORDI is deciding whether to change the focus of the activity.

7.2.2 Members suggested that the budget could be spent for some other activity. Mr. Wen suggested inviting experts to institutes, while Mr. Yang suggested sending scientists to other institutes for training, e.g. to QHSS for nutrient training, or to IAEA-MEL for organics and metals training.

7.2.3 Ms. Choi suggested combining this activity with the phytotoxin workshop.

7.3 Phytotoxin Workshop

7.3.1 Ms. Chiang reported on the consultations between PMO and IAEA-MEL and other laboratories in Asia and that might have the facilities to carry out phytotoxin training. She informed members that should they wish to implement this activity, they should agree on the objectives of this activity and also level of training, in order to identify the most appropriate lab to carry out the training.

7.3.2 Members suggested that some of the future activities could be combined with each other, and made the decision after receiving information from the Secretariat about the Visiting Scientist 2 activity.

7.4 Visiting Scientist 2

7.4.1 Ms. Chiang described the first Visiting Scientist activity carried out in 2006 where a scientist from NMEMC visited SSI to carry out organic chemical analyses. It was suggested that the next round of this activity could be implemented as before, or consider inviting scientists to a lab to practice some techniques.

7.4.2 Following the suggestions given during this agenda, **members agreed:**

- **To combine the budget for the activities listed in Agenda 7.2 through 7.4 and use the budget for the various visits to other institutions.**
- **Scientists from the region would visit QHSS for further training on nutrients analysis.**
- **To combine "Level 2" capacity building activities with phytotoxin training. Scientists from the region will visit IAEA-MEL for further training on metals and organics analysis and also phytotoxin training.**
- **Not to have a separate Visiting Scientist activity, but to use the budget for the above two visits.**

7.4.3 Members also proposed additional future activities:

- Inter-calibration for Nutrients-Round 3 and Metals and Organics-Round 2. **It was agreed to carry out the activity as before, where the CRMs and samples are sent to each lab for analysis. Labs that submitted results in Metals and Organics-Round 1 and additional labs would be invited to participate in Round 2. NWG leaders agreed to identify additional labs to participate in the exercises.** Mr Shin Kyung Hoon suggested that a summary workshop should be held after these exercises. Members included it into the workplan, and would reconsider the necessity of the workshop after the inter-calibration exercise results are provided next year.

- Mr. Wen proposed that RWG–P members and relevant PMO staff should be invited to other LME project sites to exchange ideas, lessons learned, and experiences on pollution control, public awareness, and regional monitoring methodologies. It was suggested to visit the Black Sea, Mediterranean, or other LMEs.

8 WORKPLAN FOR 2008

8.1 Based on the activities discussed during the course of the meeting, members created and agreed on a workplan for 2008, for submission to the next PSC Meeting (Annex VI).

9 OTHER BUSINESS

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

9.2 Members did not raise any other issues.

10 DATE AND PLACE FOR 5TH RWG-POLLUTION MEETING

10.1 The Chairperson invited members to consider the date and place for the 5th RWG-P Meeting.

10.2 Members agreed to have the Fifth RWG-P Meeting in Xiamen, China from 8-10 October 2008.

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 all objectives were met. He thanked all members and the PMO for contributing their expertise, experiences, and knowledge, and that the outputs from the meeting will have meaningful inputs for the Yellow Sea's management.

12.2 The PMO staff thanked all members for their hard work and contributions that will assist with the completion of the SAP.

12.3 Ms. Wang and Mr. Yang thanked the PMO for organising the meeting successfully, and all colleagues for working together co-operatively. Finally, the members expressed their appreciation to the Chairperson for leading discussions in an efficient manner so that all agenda items were fruitfully concluded.

12.4 Following the closing statements, the Chairperson declared the meeting closed on 13th October 2007.

Annex I

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Annex II

List of Documents

Working Documents

UNDP/GEF/YS/RWG-P.4/1	Provisional Agenda
UNDP/GEF/YS/RWG-P.4/2	Annotated Provisional Agenda
UNDP/GEF/YS/RWG-P.4/3	Report of the Meeting *(to be prepared at the meeting)*
UNDP/GEF/YS/RWG-P.4/4	Expected Outputs From the 4th RWG-P Meeting
UNDP/GEF/YS/RWG-P.4/5	Completed Activities of the Pollution Component in the Past Year
UNDP/GEF/YS/RWG-P.4/6	Strategic Action Programme (SAP) Preparation
UNDP/GEF/YS/RWG-P.4/7	Pollution Component Activities for 2008 and Onwards
UNDP/GEF/YS/RWG-P.4/8	Pollution Component's Workplan for 2008

Information Documents

UNDP/GEF/YS/RWG-P.4/inf.1	Provisional List of Documents
UNDP/GEF/YS/RWG-P.4/inf.2	Provisional List of Participants
UNDP/GEF/YS/RWG-P.4/inf.3	Provisional Working Programme for the Meeting
UNDP/GEF/YS/RWG-P.3/3	Report of "Third Meeting of the Regional Working Group for the Pollution Component"
UNDP/GEF/YS/RSP.3/3	Report of the "Third Meeting of the Regional Scientific and Technical Panel"
UNDP/GEF/YS/PSC.3/3	Report of the "Third Meeting of the Project Steering Committee"
UNDP/GEF/YS/SAP.1/2 rev4	Conceptual Procedure for SAP Preparation
UNDP/GEF/YS/AWG.1/3	Report of the "First Meeting of the Strategic Action Programme *Ad-hoc* Working Group for the UNDP/GEF Yellow Sea Project"
UNDP/GEF/YS/AWG.2/3	Report of the "Second Meeting of the Strategic Action Programme *Ad-hoc* Working Group 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 Documents Available to the Meeting
2.2 Organisation of Work

3. ADOPTION OF THE MEETING AGENDA

4. EXPECTED OUTPUTS FROM THE 4TH RWG-P MEETING

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

5.1 First Yellow Sea Regional Science Conference
5.2 Inter-calibration Exercises for Trace Metals and Organics
5.3 Inter-calibration Summary Workshop

6. PREPARATION OF THE SAP

6.1 Consultation & SAP Ad-hoc Meetings
6.2 Regional Targets & Proposed Management Actions
6.3 Feasibility Studies
6.4 Potential Demonstration Sites
6.5 Remaining tasks

7. ACTIVITIES TO BE IMPLEMENTED FROM 2008 ONWARDS

7.1 Workshop on Assessing Marine Environment Quality
7.2 “Level 2” Capacity Building, e.g. AMETEC Training
7.3 Phytotoxin Workshop
7.4 Visiting Scientist 2

8. WORKPLAN FOR 2008

9. OTHER BUSINESS

10. DATE AND PLACE FOR 5TH RWG-POLLUTION MEETING

11. ADOPTION OF THE MEETING REPORT

12. CLOSURE OF THE MEETING

"Problem Issue"	Regional target (2020)	General action	Ideal Management Action			Analysis of Planned &			Feasible Management Actions by 2020			Technical Feasibility	Remark
			Technical	Institutional	Legislative	Technical	Institutional	Legislative	Technical	Institutional	Legislative		
	1.Meet requirements in Codex alimentarius / Stockholm Convention / MARPOL	Action 1.1 Monitoring and assessment	regular monitoring of major pollutant sources, including atmospheric deposition; establish regional QA/QC guidelines for monitoring	establish regional monitoring network, and sharing of monitoring data among all agencies	develop new regulation and strict enforcement based on existing laws or newly developed standards in each country	monitoring programmes only at national level and scattered among responsible agencies	management of input sources and sharing of information not well co-ordinated	national/regional review of pollution-related conventions (reg'l GA)	continue monitoring programmes nationally, implement regional monitoring programme; regional workshop every 5years, majoring in monitoring technology, parameters, assessment on status and trends, main problems, etc. with the monitoring centers and organisations	set up a mechanism for agreements and methodology to share monitoring results	mandatory review of environmental quality standards every 5 years	4	nat'l monitoring programmes already exist; both countries already signatories to int'l conventions listed
			identification and annual review of "hot spots" (sources and sinks)	improved co-operation among agencies for the intensive monitoring of hotspots	develop new regulation for pollutant loading from hot spots	"hot spot" of river discharge identified in Poll. Regional Synthesis	CH - total quantity-based watershed management plans; KOR has co-operation among agencies dealing with hotspots	regulations exist, but are limited	establish diagnostic strategy for sources and sinks	regional forum for integrated review on hot spots; improve national co-ordination of contaminant control through regular IMCC meetings	harmonise existing regulation	3	necessary, but capacity to do so is currently limited
			develop regional methodologies for assessment of status & trends of contaminants in water, sediment and organisms; introduce assessment using agreed methodologies to ensure agreed pollution targets are met	establish coordination mechanism for the assessment of contaminants and sharing of ecotoxicological data	harmonise regional protocol	national methodologies exist for marine pollution assessment. No regional agreed methods.	assessments exist, but not well co-ordinated among different agencies	National legislation exist but not harmonised	develop regional methodologies for assessment of status & trends of contaminants in water, sediment and organisms; introduce assessment using agreed methodologies to ensure agreed pollution targets are met	establish coordination mechanism for the assessment of contaminants and sharing of ecotoxicological data	not relevant	3	necessary, but capacity to do so is currently limited
		Action 1.2 Control of contaminants discharge	install facilities/equipment to control or reduce discharge from industrial and municipal sources	establish intensive monitoring and inspection system for all agencies; establish mechanism to promote best available techniques and best environmental practices for related land and sea-based industries	improve enforcement & legislation	control with existing standards	CH - pollutant discharge limits don't include all toxic contaminants; incentives given for self control of pollutant loading; KOR - incentives given for self control of pollutant loading	national control standards exist	update facilities/equipment to control or reduce discharge from industrial and municipal sources; regional monitoring and assessment of contaminant sources and fate	establish intensive monitoring and inspection system for all agencies; establish mechanism to promote best available techniques and best environmental practices for related land and sea-based industries	harmonise national with international requirements of discharge	3	need more funding, technology, policy
	2. Reduction of total loading from point sources from 2006 levels (China will reduce total N loading from point sources 10% from 2006-2010)	Action 2.1 Control of total loading	routine monitoring of major input sources and loads	national ministries co-operate with each other and have regular discussions; ministerial level regional cooperative mechanism to have regular discussions	establishing bylaws to meet the target	marine environmental monitoring programmes exist nationally, but limited understanding of N transfer from atmosphere to YS	Weak national co-ordination mechanism; no data and information exchange mechanism	National legislation exist, but is disjointed	routine monitoring of major input sources and loads; data and information exchange; expand research on atmospheric deposition	Enhance national co-ordination mechanism	harmonise existing regulation among relevant national regulatory bodies; annual review that target will be met for each current 5 yr period	4	scientific research already initiated
			implement research on environmental capacity for nutrient assimilation	establish regional workshop to discuss and improve understanding of envtl capacity	establish total-quantity-control regulation	limited understanding of environmental capacity of YS for nutrient assimilation	weak national co-ordination mechanism	CH - insufficiently detailed laws addressing total loading control; KOR - total loading control law & regulation exist for major rivers	calculation of loads in hot spot area	establish regional workshop to discuss and improve understanding of envtl capacity	incorporate total loading control programme in national development plans	3	scientists have different opinion on how to calculate loads
			increase treatment capacity to reduce discharge according to environmental capacity	establish co-ordination between government agencies	legalise annual check for targets being met	China: national plan to reduce N 10% in 5 years plan, Korea has strict regulation to control N discharge	weak co-ordinating mechanism in place	China: regulation and plans for control of discharge, Korea has strict regulation to control N discharge	Review the current waste treatment facilities; provide recommendation for facility's future development every 5 years, promoting clean production and recycling use, improving treatment system and capacity, new treatment plant construction	establish co-ordination between government agencies	improve laws and regulations on clean production, recycling use, etc	4	already happening in many places
			implement best practice use of fertiliser	promote mechansim to implement eco-friendly agriculture	enact law and regulations to encourage eco-agriculture	some monitoring on fertiliser use	weak mechansim to implement eco-friendly agriculture	weak law and regulations to encourage eco-agriculture	monitoring and assessment; technical recommendations on better fertiliser use	implement mechanism to encourage use of organic fertilisers	strengthen law/regulations to encourage eco-agriculture and organic fertiliser use	4	some monitoring already in place

"Problem Issue"	Regional target (2020)	General action	Ideal Management Action			Analysis of Planned &			Feasible Management Actions by 2020			Technical Feasibility	Remark
			Technical	Institutional	Legislative	Technical	Institutional	Legislative	Technical	Institutional	Legislative		
			reduce loading from sea based source	establish co-ordination between government agencies on monitoring and information exchange	initiate environmental-target-control regulation	KOR - current efforts in dredging to remove polluted sediments; CH - limited action in this area	monitoring programmes weakly co-ordinated among responsible agencies; no data sharing mechanism	weakly co-ordinated laws and regulation	monitoring and assessment of sea based sources; practice of sustainable mariculture; dredge to remove polluted sediments	establish co-ordination between government agencies on monitoring and information exchange	initiate environmental-target-control regulation	3	necessary, but contribution from sea-based sources is lower than land-based sources, difficult to monitor and assess
		Action 2.2 New approach for treatment of nutrients	use existing or construct additional wetlands to serve as nutrient sink	establish co-ordination between government agencies on monitoring and information exchange	legislation to promote sustainable utilization of wetland	CH - wetlands used as N sink demonstration; KOR - many artificial wetlands constructed for use as nutrient sink	limited co-ordinating mechanism among marine, wetland, wastewater treatment agencies	Korea - no further coastal land reclamation allowed; weakly co-ordinated laws and regulation	use existing or construct additional wetlands to serve as nutrient sink	establish co-ordination between government agencies on monitoring and information exchange	legislation to promote sustainable utilization of wetland	3	need funding and technology to maintain wetland
N:Si. Decrease N, Increase Si		Action 2.3 Monitoring and assessment on N:P:Si (refer N loading actions above and RWG-E actions on this issue)										4	existing national monitoring networks
		Action 3.1 Waste reduction	Implement technologies for waste reduction, re-use, recovery, and disposal	provide more funding opportunities for recycling enterprises	complete compliance with waste management laws and regulations; harmonise with int'l conventions	Continuous execution of ocean waste collection project	implement industry policy and encourage and facilitate adequate funding for control of solid pollutants, including litter in rivers	weak regulation and policy to support ocean waste reuse enterprises	Implement technologies for waste reduction, re-use, recovery, and disposal	provide more funding opportunities for recycling enterprises	more regular and stricter enforcement of marine litter laws; improved compliance with waste management laws and regulations; harmonise with int'l conventions	3	technology exists, but needs higher level of stakeholder environmental awareness
	3. Reduced standing stock of litter from current level (Increase public awareness; periodic clean ups)	Action 3.2 Marine litter cleaning	develop regional monitoring programme	establish co-operative mechanism to share data on marine litter	establish clear national & regional guidelines on marine litter monitoring and assessment	monitoring programmes only at national level	weak co-ordination at national level for monitoring; NOWPAP has established regional programme on marine litter	some regulations, but not well co-ordinated	develop and implement regional monitoring programme	establish co-operative mechanism to share data on marine litter	establish clear national & regional guidelines on marine litter monitoring and assessment	4	NOWPAP's regional programme includes YS region
			cleaning of marine litter in YS	develop operational approach for litter removal	establish relevant regulations and acts	youth awareness programs (e.g. beach cleanup, envt'l education) taking place in some areas	limited approaches for litter removal	some regulations, but not well co-ordinated	cleaning of marine litter in YS coastal waters	develop operational approach for litter removal	establish relevant regulations and acts	3	difficult to clean from waters, but easy on land
			Develop & implement regular environmental awareness and education programmes	formalise environmental awareness and education programmes into national plans	establish relevant regulations and acts	limited envt. awareness and education programmes	KOR - NGOs have strong awareness programmes, elementary schools have environment education classes; CH - some programmes	some regulations exist	Develop & implement regular environmental awareness and education programmes	mainstream environmental awareness and education programmes into national plans	establish relevant regulations and acts	4	already happening in KOR elementary schools, other activites already happening in the region
bathing beaches & other recreational waters	4. Reduce contaminants, particularly in bathing beaches and other marine recreational waters, to nationally acceptable levels	4.1 Reduce to nationally acceptable & WHO levels	regular monitoring of recreational waters; information dissemination of monitoring results	government-issued announcement to public about beach closures; co share monitoring programmes among agencies	enforce monitoring of recreational waters; legalisation of closure of sub-standard recreational waters	national monitoring programmes exist	CH - local government-issued advisories to public about beach closures in some areas; KOR - central govt advisories issued in bathing beaches	guidelines exist for bathing beach water quality	regular monitoring of recreational waters; information dissemination of monitoring results	government-issued announcement to public about beach closures; co share monitoring programmes among agencies	enforce monitoring of recreational waters; legalisation of closure of sub-standard recreational waters	4	some programmes already happening in the region

Annex V

Shortlist of Pollution Component's Demonstration Activities

A. Atmospheric deposition monitoring and assessment

- Coastal area
- 2 monitoring stations
- monthly sampling
- Measure nutrients, PAHs, trace metals.

Expected outputs:

- To evaluate amounts of contaminants from atmospheric deposition
- To assess temporal distribution of atmospheric deposition
- To assess the contribution of atmospheric deposition to total loadings of the coastal area
- To inform govt on amount of atm deposition and major sources of contaminants

B. Monitoring and assessment of sea-based sources of nutrients

- Coastal Bay containing mariculture activity
- 2 survey cruises

Expected outputs:

- To assess the contribution of sea-based discharge to total loadings
- Suggestion on reduction of sea-based discharge mainly of nutrients
- Inform mariculture industry where major sources of nutrients are released from, so that mariculture industry can improve its sustainability

C. Management demonstration for recreational waters

- any coastal city
- Regular monitoring by govt agency
- Marine litter monitoring and cleaning
- Environment awareness education

Expected outputs:

- Proposed Management framework for recreational waters
- Beach closure/advisory system to improve public confidence in health and safety issues
- Show improved environmental awareness

D. Calculation of nutrient loads in hot spot area

- Any hot spot estuarine area
- Seasonal cruise + additional monitoring by govt agency
- Modeling nutrient loads

Expected outputs:

- Identification of main nutrient sources
- Calculation of nutrient loads

- Assessment of eutrophication impacts
- inform govt agencies on nutrient control measures

E. Monitoring and public awareness on marine litter

- coastal area
- 2 surveys

Expected outputs:
- Proposed management framework on marine litter in marine environment
- Show improved environmental awareness

F. regular public environmental awareness programmes

- set-up permanent exhibitions of specimens, posters, books, A/V materials
- can be new one or combine with existing ones

Expected outputs:
- exhibition + activities as needed
- enhance public awareness
- show govt how many participants were involved in exhibition set up and activities

Priority Ranking

Calculation of nutrient loads in hot spot area - 1*

Monitoring and assessment of sea-based sources of nutrients - 2

Atmospheric deposition monitoring and assessment – 3

Monitoring and public awareness on marine litter - 4
Regular public environmental awareness programmes - 4

Management demonstration for recreational waters - 5

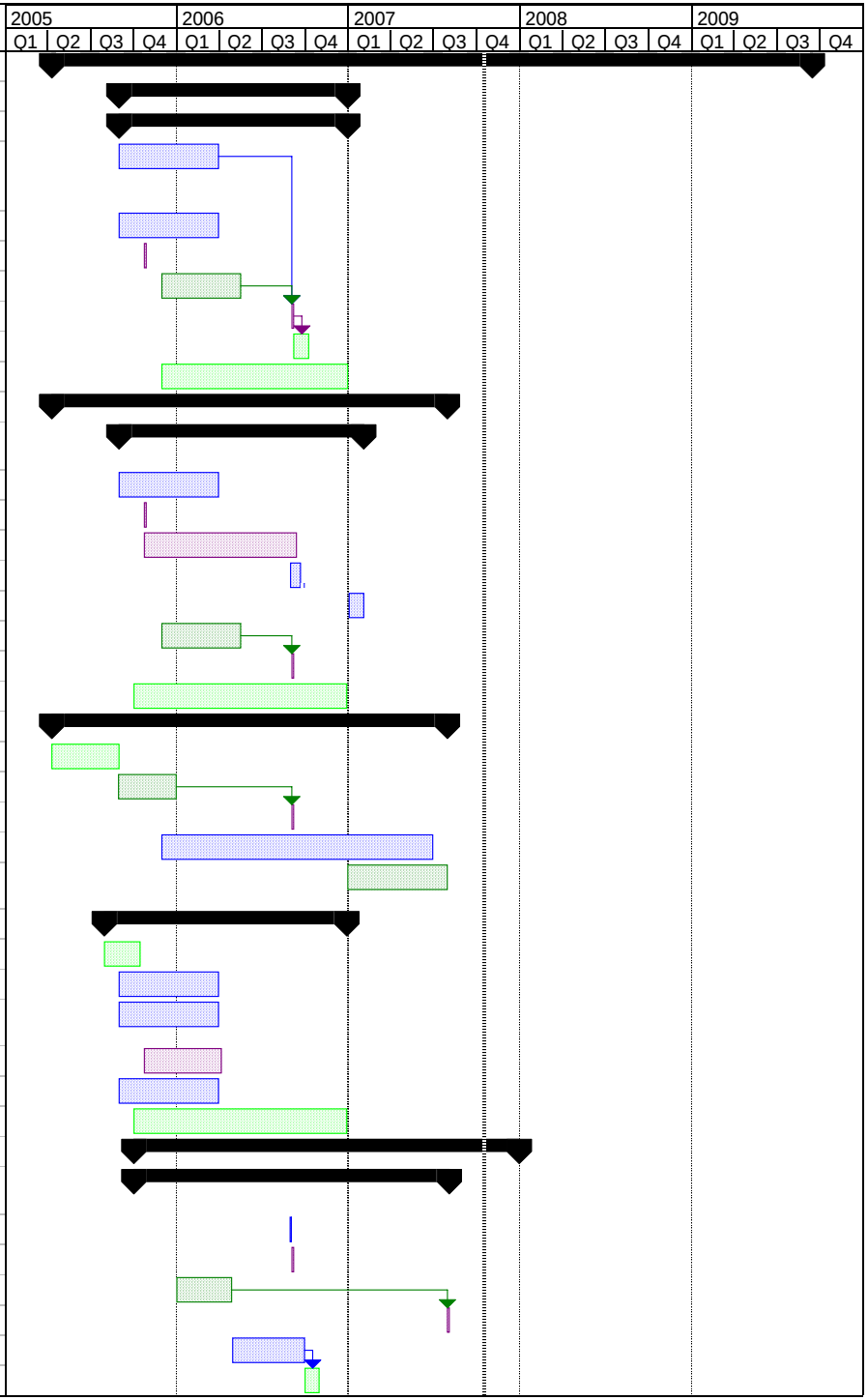
* 1 is highest priority

Annex VI

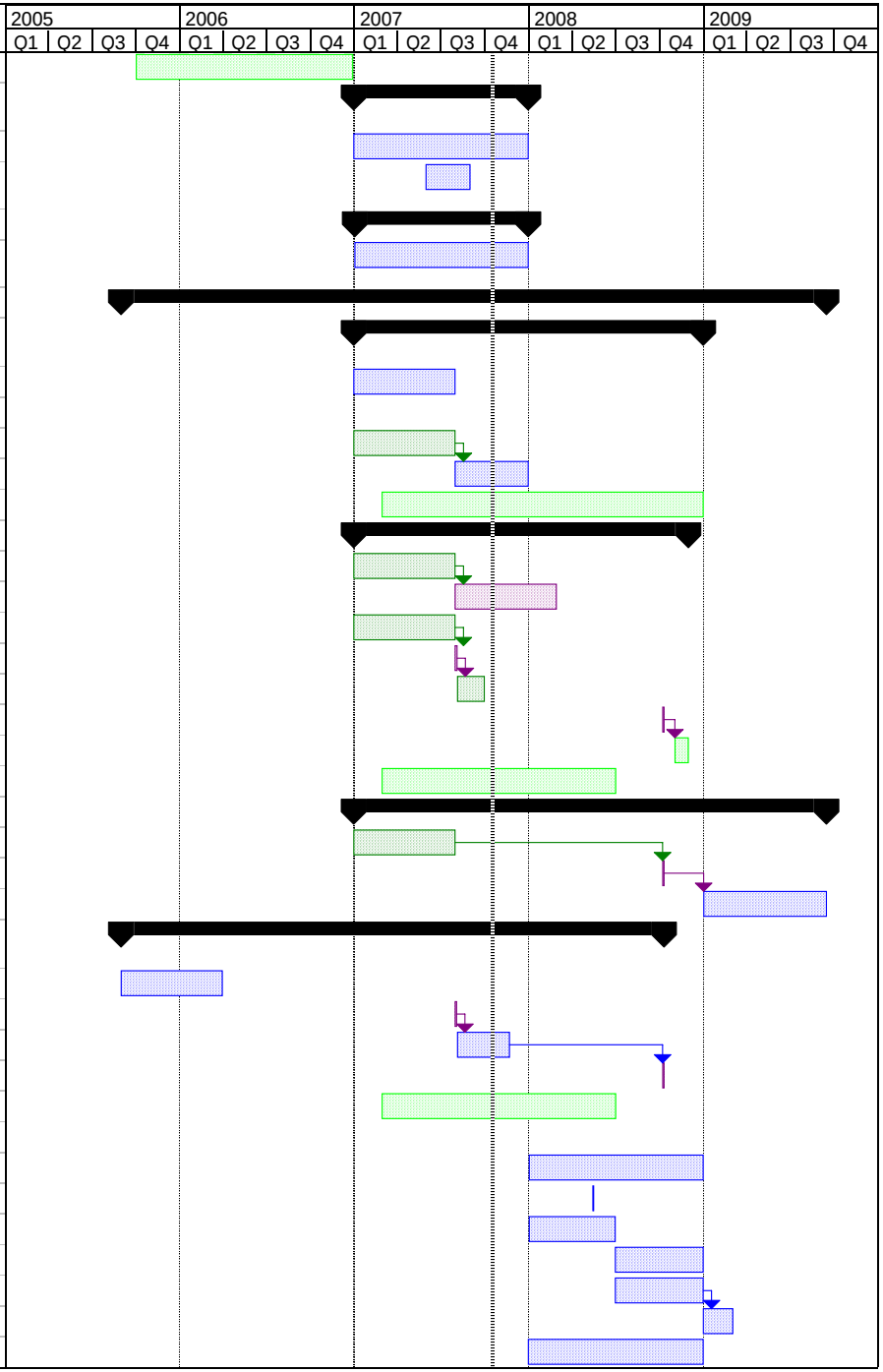
Pollution Component's Workplan for 2008

Activity	Action	Timeline / Deadline
Visiting Scientist & Capacity Building		
visit QHSS for nutrients analyses	PMO advertise	Oct - end Dec 2007
	receipt of proposal	31 Dec. 2007
	visit to QHSS	before end June 2008
visit IAEA-MEL for metals/organics analyses & phytotoxin training	PMO advertise	Oct - end Dec 2007
	receipt of proposal	31 Dec. 2007
	visit to IAEA-MEL	before end June 2008
Inter-calibration:		
Organics and metals in sediment & biota - Round 2	NWG leaders give PMO new lab names	May 2008
Nutrients - Round 3	carry out exercises	3rd-4th quarter 2008
IC Summary Workshop #2	TBD after results received	Dec. 2008/early 2009
Visit to other LME for experience exchange		2008
Assessment Workshop	NMEMC give proposal to PMO	31 Dec. 2007
	output of proceedings including extended abstracts, presentations, workshop summary	at least 2 weeks before workshop
	hold workshop	15-16 May 2008
SAP Finalisation		
Feasibility Studies		Sept - Dec. 2007
Demo site selection	4th RSTP & PSC	Nov. 2007
SAP drafting	Drafting Group to liaise through e-mail and 3 working meetings	Dec. 2007 to May 2008
SAP review by RSTP and PSC	Special RSTP/PSC	Apr-08
SAP approval	govts	Jun-08
Demo site implementation		2008 - 2009
NYSAP		
drafting NYSAP	NPC and national members	2008
govt approval of NYSAP	govt	late 2008
5th RWG-P Meeting	PMO will arrange	8-10 Oct. 2008

ID	Task Name	Duration	Start	Finish
1	**OBJECTIVE IV: POLLUTION**	**1158 days?**	**Mon 4/11/05**	**Tue 9/15/09**
2	**IVA: CRITICAL SPOTS**	**347 days?**	**Thu 9/1/05**	**Sun 12/31/06**
3	**ACT 1: Determine and rank critical spot sources of water quality degradatic**	**347 days?**	**Thu 9/1/05**	**Sun 12/31/06**
4	Review previous and ongoing monitoring system and assess methodologies and/or technical guidelines (including target contaminants, QA/QC, intercalibration exercises, data exchange, etc.) (contract 1)	152 days?	Thu 9/1/05	Fri 3/31/06
5	Develop technologies for monitoring contaminants and nutrients (contract 1)	152 days	Thu 9/1/05	Fri 3/31/06
6	Present outcomes of ranking, data and info in WG meeting 2	4 days	Tue 10/25/05	Fri 10/28/05
7	Prepare a regional synthesis (consultant 1)	120 days	Thu 12/1/05	Wed 5/17/06
8	Finalise national outputs and synthesis (WG meeting 3)	4 days?	Mon 9/4/06	Thu 9/7/06
9	Publish the outcomes (printing)	22 days?	Fri 9/8/06	Mon 10/9/06
10	Inputs to final TDA	282 days?	Thu 12/1/05	Sun 12/31/06
11	**IVB: CONTAMINANT LEVELS**	**602 days?**	**Mon 4/11/05**	**Tue 7/31/07**
12	**ACT 1: Develop baseline data and summarize contaminant and nutrient levels in the YSLME**	**372 days?**	**Thu 9/1/05**	**Sat 2/3/07**
13	Review existing data & info on contaminant levels (contract 1)	152 days	Thu 9/1/05	Fri 3/31/06
14	Data quality control for baseline data WG meeting 2	4 days	Tue 10/25/05	Fri 10/28/05
15	Present outcomes of ranking, data and info in WG meeting 2	232 days?	Tue 10/25/05	Wed 9/13/06
16	Environmental Survey with other working groups (if not, need ship time)	15.5 days?	Fri 9/1/06	Sat 9/30/06
17	Environmental Survey with other working groups - winter	22 days?	Thu 1/4/07	Sat 2/3/07
18	Prepare a regional synthesis (consultant 1)	120 days	Thu 12/1/05	Wed 5/17/06
19	Finalise national outputs and synthesis (WG meeting 3)	4 days?	Mon 9/4/06	Thu 9/7/06
20	Inputs to final TDA	325 days?	Mon 10/3/05	Fri 12/29/06
21	**ACT 2: Develop regional monitoring network strategy**	**602 days?**	**Mon 4/11/05**	**Tue 7/31/07**
22	Establish a monitoring network / or use the existing ones (PMO)	103 days?	Mon 4/11/05	Wed 8/31/05
23	Draft monitoring guidelines / standards (consultant 2)	88 days?	Wed 8/31/05	Sat 12/31/05
24	Agree on the guidelines / standards (WG Meeting 3)	4 days?	Mon 9/4/06	Thu 9/7/06
25	Intercalibration exercise of participating labs (Contract 3)	412 days?	Thu 12/1/05	Sat 6/30/07
26	Development of indicators to assess the implementation of relevant international conventions (consultant 2)	152 days?	Mon 1/1/07	Tue 7/31/07
27	**ACT 3: Develop funding mechanism to implement the monitoring strategy**	**370 days?**	**Mon 8/1/05**	**Fri 12/29/06**
28	Prepare format for data & info collection (PMO), no need to rank the spots	55 days?	Mon 8/1/05	Sat 10/15/05
29	Identification of hot spots (contract 1)	152 days?	Thu 9/1/05	Fri 3/31/06
30	Contract to relevant national institution(s) to collect hot spots data and information (contract 1)	152 days?	Thu 9/1/05	Fri 3/31/06
31	Discussion & further requirements (WG meeting 2)	118 days?	Tue 10/25/05	Thu 4/6/06
32	Revise the hot spots data & info (contract 1)	152 days?	Thu 9/1/05	Fri 3/31/06
33	Inputs to final TDA	325 days?	Mon 10/3/05	Fri 12/29/06
34	**IVC: Analysis of the Fate and Transport of Contaminants to Facilitate SAP Anal**	**586 days?**	**Mon 10/3/05**	**Mon 12/31/07**
35	**ACT 1: Review existing understanding of fate and transport of contaminants and nutrients**	**480 days?**	**Mon 10/3/05**	**Sat 8/4/07**
36	Review existing understanding (contract 1) (workshop)	2 days?	Thu 8/31/06	Sat 9/2/06
37	Present outcomes of reviewing from national outputs in WG meeting 3	4 days?	Mon 9/4/06	Thu 9/7/06
38	Prepare a regional synthesis (consultant 3) - TBD	85 days?	Mon 1/2/06	Fri 4/28/06
39	Finalise national outputs and synthesis (WG meeting 4)	3 days?	Wed 8/1/07	Sat 8/4/07
40	Practice & intercalibration of the procedure (contract 4) - TBD	110 days?	Mon 5/1/06	Sat 9/30/06
41	Publish the outcomes (printing)	22 days?	Mon 10/2/06	Tue 10/31/06



ID	Task Name	Duration	Start	Finish
42	Inputs to final TDA	325 days?	Mon 10/3/05	Fri 12/29/06
43	**ACT 2: Perform fate and transport analyses of contaminants and nutrients for management and policy development, including EIA process, ICZM**	**261 days?**	**Mon 1/1/07**	**Mon 12/31/07**
44	Analysis for fate and transport of contaminants and nutrients (contract 4)	261 days?	Mon 1/1/07	Mon 12/31/07
45	Impact prediction of impact of discharged contaminants and nutrients on the environment (contract 7) - no budget	66 days?	Fri 6/1/07	Fri 8/31/07
46	**ACT 3: Pollution prevention and management**	**259 days?**	**Wed 1/3/07**	**Mon 12/31/07**
47	ICM actions for controlling discharge of contaminants and nutrients (contract 6)	259 days?	Wed 1/3/07	Mon 12/31/07
48	**IVD. Regional Strategy for Pollution Control**	**1055 days?**	**Thu 9/1/05**	**Tue 9/15/09**
49	**ACT 1: Review and compare national regulations and laws on water quality and pollution control, develop proposals**	**523 days?**	**Mon 1/1/07**	**Wed 12/31/08**
50	Contract (5) to relevant national institution(s)	152 days?	Mon 1/1/07	Tue 7/31/07
51	Regional review (WG meeting 4)	4 days	Tue 10/16/07	Fri 10/19/07
52	Regional analysis and suggestion on harmonisation (consultant 4)	152 days?	Mon 1/1/07	Tue 7/31/07
53	Publish review report	109 days?	Wed 8/1/07	Mon 12/31/07
54	Inputs to national and regional SAP	480 days?	Thu 3/1/07	Wed 12/31/08
55	**ACT 2: Develop investment strategies TBD**	**500 days?**	**Mon 1/1/07**	**Sun 11/30/08**
56	Economic valuation of hot spots, & identify the opportunities (Consultant 4)	152 days?	Mon 1/1/07	Tue 7/31/07
57	Identify hot spots in both source, and impact (WG meeting 4)	152 days?	Wed 8/1/07	Thu 2/28/08
58	Prepare draft strategy (consultant 4)	152 days?	Mon 1/1/07	Tue 7/31/07
59	Discuss the draft (WG meeting 4)	3 days?	Wed 8/1/07	Sat 8/4/07
60	Revise the draft (Consultant 4)	40 days?	Mon 8/6/07	Sun 9/30/07
61	Finalise the investment strategy (WG meeting 5)	3 days	Wed 10/8/08	Fri 10/10/08
62	Publish the investment strategy	20 days?	Mon 11/3/08	Sun 11/30/08
63	Inputs to regional SAP	349 days?	Thu 3/1/07	Tue 7/1/08
64	**ACT 3: Develop funding mechanism to implement the regional strategy**	**708 days?**	**Mon 1/1/07**	**Tue 9/15/09**
65	Prepare an implementation plan (consultant 4)	152 days?	Mon 1/1/07	Tue 7/31/07
66	Agree on the implementation plan (WG meeting 5)	3 days?	Wed 10/8/08	Fri 10/10/08
67	Contracts for implementation (contract 5)	184 days?	Fri 1/2/09	Tue 9/15/09
68	**ACT 4: Develop regional priorities and strategies to reduce contaminant and nutrient levels**	**812 days?**	**Thu 9/1/05**	**Fri 10/10/08**
69	Root cause analysis for contaminants (contract 1)	152 days?	Thu 9/1/05	Fri 3/31/06
70	Discuss the draft (WG meeting 4)	3 days?	Wed 8/1/07	Fri 8/3/07
71	Revise the draft	79 days?	Mon 8/6/07	Thu 11/22/07
72	Finalise the strategy (WG meeting 5)	3 days	Wed 10/8/08	Fri 10/10/08
73	Input to SAP	349 days?	Thu 3/1/07	Tue 7/1/08
74				
75	**New or outstanding activity**	260 days?	Thu 1/3/08	Wed 12/31/08
76	Workshop on assessing marine environment quality	2 days?	Thu 5/15/08	Fri 5/16/08
77	Capacity Buidling, incl. phytotoxin, QHSS visit, IAEA-MEL visit, Visiting Scientist	128 days?	Thu 1/3/08	Mon 6/30/08
78	IC Nutrients Round 3	132 days?	Tue 7/1/08	Wed 12/31/08
79	IC Metals/Organics Round 2	132 days?	Tue 7/1/08	Wed 12/31/08
80	IC Summary #2	45 days?	Thu 1/1/09	Tue 3/3/09
81	LME experience exchange	262 days?	Tue 1/1/08	Wed 12/31/08



List of Acronyms

AMETEC	APEC Marine Environmental Training and Education Center
CRMs	certified reference materials
GA	governance analysis
GEF	Global Environment Facility
IAEA	International Atomic Energy Agency
IAEA MEL	IAEA Marine Environment Laboratory
IMCC	Inter-ministerial Co-ordinating Committee
KORDI	Korea Ocean Research and Development Institute
LME	large marine ecosystem
MARPOL	International Convention for the Prevention of Pollution From Ships
NMEMC	National Marine Environmental Monitoring Center - China
NOWPAP	Northwest Pacific Action Plan
NPC	National Project Co-ordinator
NWG	National Working Group
NYSAP	National Yellow Sea Action Plan
PMO	Project Management Office
PSC	Project Steering Committee
QA/QC	quality assurance/quality control
QHSS	Queensland Health Scientific Services
ROK	Republic of Korea
RWG-P	Regional Working Group – Pollution
SAP	Strategic Action Programme
TDA	Transboundary Diagnostic Analysis
UNDP	United Nations Development Programme