About this publication:

This publication contains the report of the Fifth Meeting of the Regional Working Group for the Ecosystem Component, under the UNDP/GEF Project, “Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem.” The report includes a summary of the discussions and agreements from the Meeting. The ecosystem management actions (supporting services) for the Strategic Action Programme (SAP) were reviewed, and mechanisms suggested for their implementation in the potential 2nd Phase of the project. On-going SAP demonstration activities were assessed and suggestions for future work given.

For reference purposes, this report may be cited as:

UNDP/GEF 2008. Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem, Report of the Fifth Meeting of the Regional Working Group for the Ecosystem Component. UNDP/GEF/YS/RWG-E.5/3.

REDUCING ENVIRONMENTAL STRESS IN THE YELLOW SEA LARGE MARINE ECOSYSTEM

Report of the Fifth Meeting of the
Regional Working Group for the Ecosystem Component
UNDP/GEF Yellow Sea Project

Taean, Republic of Korea, 23 - 25 September 2008

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

UNDP/GEF/YS/RWG-E.5/3
Date: 25 September 2008
English only

Fifth Meeting of the Regional Working Group for the Ecosystem Component
Taean, Republic of Korea, 23 - 25 September 2008

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, Mr. Yihang JIANG, Project Manager, opened the meeting and welcomed the members of the Regional Working Group-Ecosystem (RWG-E) and all participants to Taean, Republic of Korea.

1.1.2 Mr. Jiang stated that all co-operative cruises were successfully carried out, which was good timing to hold this meeting to discuss the results from the cruises. Mr. Jiang informed the meeting that the PSC had asked the project to begin developing documents for the project's next phase, focusing on implementing the SAP. He also mentioned that during the meeting, we would hear some preliminary reports on SAP demonstration activities.

1.1.3 Mr. YOO Sinjae, Chairperson of the RWG-E, welcomed everyone and noted that the project had come a long way since the first gathering of this RWG. He reminded everyone of the task in front, namely, to see what had been accomplished thus far, and also how to smoothly progress to the project's next phase, which would possibly start in 2010. Participants noted that their inputs were required to plan for the project's next phase.

1.2 Introduction of members

1.2.1 Members and all participants were invited to introduce themselves. The list of participants is attached as Annex I.

2 ORGANISATION OF THE MEETING

2.1 Documents Available to the Meeting

2.1.1 Mr. Yoo 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-E.5/inf.1). The list of documents is attached as Annex II.

2.2 Organisation of Work

2.2.1 Ms. Chiang was invited to present the provisional working programme for the meeting (Document UNDP/GEF/YS/RWG-E.5/inf.3), and 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-E.5/1) and Provisional Annotated Agenda (Document UNDP/GEF/YS/RWG-E.5/2) prepared by the PMO.

3.2 Members noted these additions, and adopted the agenda which is attached as Annex III to this report.

4 EXPECTED OUTPUTS FROM THE 5TH RWG-E MEETING

4.1 The Chairperson invited the PMO to present the expected outputs of the meeting (Document UNDP/GEF/YS/RWG-E.5/4). Ms. Chiang presented the list of expected outputs to be achieved by the meeting, provided some additional details for each agenda item's objective, and alerted the participants to the meeting's focus on considering the required activities for SAP implementation.

4.2 Mr. Yoo alerted the meeting that "review of activities" in the next agenda item should consider: 1) are the activities being conducted appropriately, i.e. are they meeting the original objectives? and 2) can the objectives be accomplished?

4.3 The members noted the expected outputs.

5 REVIEW OF COMPLETED AND ON-GOING ECOSYSTEM COMPONENT ACTIVITIES

5.1 Winter and Summer Co-operative Cruises - Ecosystem Component

5.1.1 The Chairperson invited Mr. ZHU Mingyuan to report the results of the co-operative cruises that took place in January and July this year. Mr. Zhu reported the winter cruise results from Chinese side and some highlights of the overall situation, showing results of physical and biological variables – temperature, salinity, DO, bacteria, blue-green algae, chl-a, benthos, grazing experiment, phytoplankton and zooplankton composition, dominance, distribution and diversity, sediment profiles and deposition rates.

5.1.2 Mr. Zhu noted that comparing results of blue-green algae from flow cytometry and microscopic analyses showed good correlation. However, bacteria results are different between China and RO Korea.

5.1.3 Chl-a concentration was observed to have very high values overall, about 3 times higher than normally expected winter values; however the results were comparable to HPLC pigment values. Chl-a values need further checking by both sides.

5.1.4 Mr. Zhu showed the comparison of phytoplankton results from the winter cruise and 2007 FIO winter cruise where the values were different by 1/3. It was suggested that the chl-a content in 2007 should be investigated. Mr. Zhu also showed a comparison of China and ROK's phytoplankton species from water samples where the data from China contained more dinoflagellates, while the data from ROK contained more diatoms.

5.1.5 Inter-comparison of macrobenthos taxonomical results was shown. There are still some differences between China and ROK. Some nutrients ratios and results for C, N, and P in sediment were also shown. The ^{210}Pb profiles for deposition rates of C, N, and P were shown to be higher compared to other studies.

5.1.6 Finally, Mr. Zhu showed some nutrients, Si, suspended solids, TOC, organic compounds, metals, and grain size results from the Pollution group, as reference for the group's discussion.

5.1.7 Questions and comments following the presentation included:

- Any relationship between chl-a and nutrient investigated?
- Since warmer water and higher salinity were observed in the bottom layers, was there any relationship to benthos community structure?
- Consider identification methods and levels for phytoplankton and zooplankton. E.g. *Skeletonema costatum* should consider the identification level. There were some species which ROK no longer identifies, but China still does. The taxonomic differences between the 2 countries in what to identify and the names of some species identified are different in each side due to using different taxonomic keys.
- It was suggested that diversity indices should specify the level or group which each diversity index is shown, as well as the name of index used.

5.1.8 During the discussion, Mr. Zhu replied that no analyses/comparisons had been made for the first 2 questions above. Mr. Jiang suggested that the differences could be listed for further study and solution. Mr. Yoo suggested that a consultancy might be necessary for inter-comparison and solving the inconsistencies after all results are in from both cruises.

5.1.9 Ms. YANG Eun-Jin presented the winter cruise results and some preliminary summer cruise results. Physical, chemical, and biological results were shown as Mr. Zhu did earlier. Ms. Yang alerted the meeting that the bacteria abundance analysis using flow cytometry vs. microscopy has differences for the winter cruise data.

5.1.10 Ms. Yang also mentioned the additional work needed to be carried out to examine C biomass of micro zooplankton and the grazing impacts of microzooplankton to determine carbon flow. Water mass was also grouped by cluster analysis which determined 2 regions of water bodies by differences in temperature, salinity, and plankton biomass.

5.1.11 Some preliminary summer cruise results were provided. Ms. Yang gave additional information on pigments, primary productivity, bacterial productivity, respiration, micro and mesozooplankton grazing, mentioning that the ratio of productivity to respiration was an extra experiment carried out during the summer cruise. **Ms. Yang informed the meeting that due to the Beijing Olympics embargo on shipping out samples, all sample were still in Qingdao; therefore an extension until mid-December was requested to report the summer results, which was duly agreed by the meeting.**

5.1.12 During the discussion, Ms. KANG Youngshil asked whether bacteria production was lower than in other seas. Unfortunately, data from winter time from other seas had not been investigated.

5.1.13 Mr. YOON Won Duk asked how much volume of sample was used for the bacteria abundance flow cytometry, to which Ms. Yang answered 1ml. Ms. Yang further informed the meeting that all samples were dyed and measured 5 times. China dyed only heterotrophic bacteria and measured only one time.

5.1.14 Mr. WANG Zongling was invited to present some preliminary results of the summer cruise. He showed results of the physical, biological, chemical, grazing experiment, and CPR at 3 transects, noting that the CPR had some problems with some probes so no plankton data were obtained by CPR.

5.1.15 Mr. Wang pointed out that the summer cruise departed immediately after a typhoon had passed, hence the temperature profile for the first few stations shows some typhoon influence with lower than expected temperatures at the surface. Another unknown factor worth further investigation was that DO was quite high at the surface at one site.

5.1.16 Following the three presentations, Mr. Jiang stated that the discrepancies in some of the results support the need for a regional monitoring network.

5.1.17 Mr. Yoo raised the issue of how to publish the results as scientific papers, as some new results were obtained and should be made known. He asked all participants to consider what would be the final products of the cruise data, what the data can be used for, and how to publish the results.

5.1.18 Participants agreed that the findings from the co-operative cruises should be published in scientific journals.

5.2 Ocean Colour 2008

5.2.1 Mr. Yoo stated the objective of the activity – the need for better satellite algorithms for chl-a, TSM, CDOM – the progress where some algorithms had been evaluated, quantification of accuracy and error range. Finally, the recommendation of the best algorithm to use will be an output of the activity.

5.2.2 Mr. Yoo gave a brief overview of the history, activity progress, database of all shared data, work in progress, and work to be completed. He informed the meeting that 2 journal articles will be published and are being written now. Also, further analysis of the ocean colour database and atmospheric correction issues are being undertaken. A word of caution was given that the refined algorithms still do not deal with turbid waters very well.

5.3 Primary Productivity Estimation in the Yellow Sea

5.3.1 Mr. Yoo continued on to presenting the activity on primary productivity estimation where a regional primary productivity algorithm is being developed for long-term monitoring. A baseline assessment of potential primary productivity in the Yellow Sea is being produced, along with monthly primary productivity maps, an annual primary productivity map, and information on the inter-annual variability of primary productivity. Surveys along the west coast of ROK will be carried out until December 2008, with outputs expected in February 2009.

5.3.2 Participants asked some questions related to estimating historical trends, estimating primary productivity at sub-surface depths, and distinguishing phytoplankton from macroalgae on remote sensing maps, to which Mr. Yoo duly answered that all could be done although there might be some limitations.

5.3.3 Mr. Jiang complimented the progress of the ocean colour activity, the shared data and low cost with good results. **Mr. Zhu was requested to find out if FIO can test the algorithms using the existing data, and provide results to the group, to which Mr. Zhu agreed to follow up.**

5.4 Contribution to the preparation of the Strategic Action Programme (SAP) - Demonstration Activities

5.4.1 Mr. Yoo explained the rationale of the SAP demonstration activities, namely to demonstrate that these activities can be implemented at full scale, and to show some success of demonstration. The participants were requested to assess the current state of the activities and give suggestions for implementation.

5.4.2 Monitoring Jellyfish Blooms

5.4.2.1 Mr. Yoon presented the progress of his work on monitoring jellyfish blooms, first giving an overview of the ecological characteristics of jellyfish, the monitoring programme, results, workplan, and expected outputs. He informed the meeting that the first recorded account of the giant jellyfish, *Nemopilema nomurai*, occurred in 1814 in ROK. This jellyfish can be seen in the East China Sea, Yellow Sea, and Sea of Japan. ROK, Japan, and China have been working together since 2004.

5.4.2.2 Mr. Yoon explained 3 methods to monitor jellyfish – visual counting, acoustics and underwater camera, ship of opportunities – all of which were on-going, with monitoring methods having been partially developed. An international monitoring network was expected to be established, consisting of institutes from ROK, China and maybe France and Japan, all countries that suffer from jellyfish blooms. Additionally, the August survey did not observe any *N. nomurai*, but found scattered layers of zooplankton and fish schools. Thus, it will be attempted to develop an algorithm to distinguish zooplankton, fish and jellyfish in the Yellow Sea.

5.4.2.3 The extensive discussion on this topic touched upon issues such as criteria that constitutes a “bloom,” the most effective monitoring method, plans to monitor polyps, and linkages between the biogeochemical situation, bloom effects and impacts.

5.4.2.4 Mr. Yoon clarified that NFRDI has data from regular monitoring, but need further experiments to fully understand the linkages. Also needed is a conversion method from acoustic and video camera to estimate abundance. While there are no existing criteria, unlike for HAB, to determine when an event could be a bloom, Mr. Yoon noted that this needed to be established.

5.4.2.5 Mr. Yoo suggested that the activity should focus on the technical side of monitoring, such as: provide technical guidelines on jellyfish monitoring, evaluate the effectiveness of each monitoring method, and propose the monitoring frequency and area to cover.

5.4.2.6 Mr. Yoon requested the PMO’s assistance to suggest some institutes from China to join the international network. **The PMO agreed to help, and noted that the appropriate counterparts in China with monitoring responsibility should be targeted as a potential member, with support of the relevant experts.**

5.4.3 Impacts of Climate Change on Yellow Sea Ecosystem

5.4.3.1 Mr. PU Xinming gave an overview of this activity including variables to measure, methods, investigating effects of climate change on phytoplankton, comparison of historical data of physical & biological characteristics, and modelling to understand environmental changes and population dynamics of *Calanus sinicus*, as there was ample historical information on this species. He mentioned that some tasks had been accomplished, such as climate data collected, change in phytoplankton over past decades analysed, preliminary enrichment experiments on dust storm effects,

and *C. sinicus* historical data collected, and that the activity would propose regional guidelines on monitoring.

5.4.3.2 Participants suggested the following issues could be looked into:

- As long-term data doesn't always explain species change, some indicator species could be use.
- Salinity is an important factor to consider with long-term change.
- **Mr. Yoon agreed to provide the contact details of his colleague who had been working on analysing temperature and salinity trends since 1965.** This person was also working on the Yellow Sea cold water mass.
- Given the limited time and funds, consider focusing on the impacts of extreme climate events.

5.4.3.3 Finally, it was suggested to demonstrate the best method of monitoring and assessing climate change impacts, rather than showing that the impacts of climate change occur. It was also suggested to recommend how many times a year to monitor, what to measure, and the kinds of analyses to do.

5.4.4 Impacts of N:P:Si Change

5.4.4.1 Mr. WANG presented the activity on examining N:P:Si changes, first by showing environment stresses in the Yellow Sea, then showing nutrient concentration changes over the past year. He explained that the activity would investigate effects of nutrient ratio changes and response of phytoplankton and zooplankton. Results from the co-operative cruise would contribute to the activity, as well as historical data, and lab and mesocosm experiments.

5.4.4.2 It was suggested that the activity should focus on understanding the impacts of the nutrient ratio changes: 1) show ratios did change; 2) give some examples of impacts of ratio change on the ecosystem; 3) suggest to policy makers and scientists the best monitoring strategy, e.g. minimum variables to sample, frequency, how the 2 countries can co-operate on cross-basin monitoring.

5.4.4.3 Participants took note of the presentations and discussion content, and **consultants agreed to incorporate the suggestions into their remaining activity implementation.**

6 SCIENTIFIC AND TECHNICAL INPUTS FOR THE 2ND PHASE PROJECT DOCUMENT

6.1 Review Management Actions
6.2 Activities required under each management action
6.3 Inputs for 2nd Phase Project Document

6.1.1 The Chairperson invited Ms. Chiang to introduce this agenda, which she did so by informing the meeting of the progress of phase 2 preparations, the rationale of activities following the SAP's theme of ecosystem services, and the activities that had been proposed by the First Session of the Phase 2 Working Group. She informed the meeting that the group should review the activities proposed for Phase 2, keeping in mind the limited funds from GEF.

6.1.2 Participants worked in plenary to review the listed activities. There was extensive discussion on the proposed activities, including the scope of regional monitoring, the monitoring network, modelling and forecasting, and committees required to oversee the activities. Participants gave their expert opinions on the types of activities to implement, the implementation mechanism, and the requested cost of each activity from GEF.

6.1.3 Participants combined some activities, particularly the annual assessment workshops for HAB, jellyfish, nutrients, and climate change, and reduced the requested budget.

6.1.4 The refined table of activities is attached as Annex IV.

7 OTHER ACTIVITIES TO BE IMPLEMENTED IN 2009

7.1 Information on the operational changes at UNOPS

7.1.1 Ms. Chiang explained to participants the UNOPS operational procedures for approving and issuing contracts, the automated payment system for contract funds, and the reason for some slight delays that might have been experienced by consultants in receiving contracts and funds. She expressed appreciation to the consultants for their understanding and patience.

7.1.2 Participants took note of the information provided.

7.2 Other activities needed

7.1.1 Participants stated that the SAP demonstration activities were the main on-going events under this component. All were happy about the progress of these activities, and stated that this would be the focus of the remainder of the project. No new activities were proposed.

8 WORKPLAN FOR 2009

8.1 Based on the discussions during the course of the meeting, members created and agreed on a workplan for 2009 for submission to the next PSC Meeting (Annex V).

9 PROPOSED CANCELLATION OF 6TH RWG-ECOSYSTEM MEETING FOR THE 2ND REGIONAL SCIENCE CONFERENCE

9.1 As 2009 will be the final year of the project, the Secretariat proposed that instead of having another round of RWG meeting, to have a regional science conference to present all the findings from the project. This would also be a good forum to present the results from the co-operative cruises.

9.2 Participants agreed to have a regional conference instead of another RWG meeting next year, and proposed to hold the conference in early November 2009.

10 OTHER BUSINESS

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

10.2 Ms. Yang confirmed that she would like to publish the results from the co-operative cruises in scientific journals before the data are accessible to the public through the project database. **It was agreed that winter cruise results would be available before the 2nd Regional Science Conference, and summer results available before the end of the project.**

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. Jiang thanked all participants for their contribution to the meeting. He emphasised the participant's and their institute's contribution to all project activities, particularly the current SAP demonstration activities, and hoped to see the results of these activities contributing to the rest of the project. Mr. Jiang looked forward to seeing the results presented in the science conference next year.

12.2 On behalf of all participants, Mr. Jiang thanked Mr. Yoo for his leadership, and expressed his appreciation for the good working relationship over the past years.

12.3 Mr. Yoo thanked all participants for their contribution to the meeting.

12.4 Following the closing statements, the Chairperson declared the meeting closed on 25th September 2008.

Annex I

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Annex II

List of Documents

Working Documents

UNDP/GEF/YS/RWG-E.5/1	Provisional Agenda
UNDP/GEF/YS/RWG-E.5/2	Provisional Annotated Agenda
UNDP/GEF/YS/RWG-E.5/3	Report of the Meeting *(to be prepared at the meeting)*
UNDP/GEF/YS/RWG-E.5/4	Expected Outputs From the 5th RWG-E Meeting
UNDP/GEF/YS/RWG-E.5/5	Completed and On-going Ecosystem Component Activities
UNDP/GEF/YS/RWG-E.5/6	Scientific and Technical Inputs for the 2nd Phase Project Document
UNDP/GEF/YS/RWG-E.5/7	Ecosystem Component Activities for 2009
UNDP/GEF/YS/RWG-E.5/8	Ecosystem Component's Workplan for 2009

Information Documents

UNDP/GEF/YS/RWG-E.5/inf.1	Provisional List of Documents
UNDP/GEF/YS/RWG-E.5/inf.2	Provisional List of Participants
UNDP/GEF/YS/RWG-E.5/inf.3	Provisional Working Programme for the Meeting
UNDP/GEF/YS/RWG-E.4/3	Report of "Fourth Meeting of the Regional Working Group for the Ecosystem Component"
UNDP/GEF/YS/RSP.4/3	Report of the "Fourth Meeting of the Regional Scientific and Technical Panel"
UNDP/GEF/YS/PSC.4/3	Report of the "Fourth Meeting of the Project Steering Committee"
UNDP/GEF/YS/AWG.3/3	Report of the "Third Meeting of the Strategic Action Programme Ad-hoc Working Group"
UNDP/GEF/YS/SPSC.2/3	Executive Summary of the "Second Special Meeting of the Project Steering Committee"
UNDP/GEF/YSJC.5/3	Summary Report of the "5th Technical Meeting for the Co-operative Cruise"
UNDP/GEF/YS/SAP	Draft Regional SAP

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 5TH RWG-E MEETING

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

5.1 Winter and Summer Co-operative Cruises - Ecosystem Component
5.2 Ocean Colour 2008
5.3 Primary Productivity Estimation in the Yellow Sea
5.4 Contribution to the preparation of the Strategic Action Programme (SAP) - Demonstration Activities

5.4.1 Monitoring Jellyfish Blooms
5.4.2 Impacts of Climate Change on Yellow Sea Ecosystem
5.4.3 Impacts of N:P:Si Change

6 SCIENTIFIC AND TECHNICAL INPUTS FOR THE 2ND PHASE PROJECT DOCUMENT

6.1 Review Management Actions
6.2 Activities required under each management action
6.3 Inputs for 2nd Phase Project Document

7 OTHER ACTIVITIES TO BE IMPLEMENTED IN 2009

7.1 Information on the operational changes at UNOPS
7.2 Other activities needed

8 WORKPLAN FOR 2009

9 PROPOSED CANCELLATION OF 6TH RWG-ECOSYSTEM MEETING FOR THE 2ND REGIONAL SCIENCE CONFERENCE

10 OTHER BUSINESS

11 ADOPTION OF THE MEETING REPORT

12 CLOSURE OF THE MEETING

Annex IV

Refined Table of Activities Proposed for Project Phase 2

	Activities	Implementation	Budget requested from GEF
MA 8-1: Assess and monitor the impacts of N/P/Si ratio change	**Set up a regional monitoring system**	Review and harmonize national methodologies for regional monitoring; see Governance action	
		Link existing national monitoring network; see Governance action	
	Monitor regional impacts	Conduct regular monitoring; operate linked national networks (seed money)	30,000
	Make regional assessment	Hold annual forums to conduct joint assessment; make policy-relevant recommendation; publish reports; 1 workshop/yr, USD15,000x3, consultant 1pm (see governance action)	
MA 8-2: Assess and monitor the impacts of climate change	**Set up a regional monitoring system**	Create regional committee to coordinate monitoring and assessment. (seed money)	30,000
		Review and harmonize national methodologies for regional monitoring; see Governance action	
		Link existing national monitoring network; see Governance action	
	Monitoring the impacts	Conduct regular basin-scale monitoring	
	Make assessment	Hold annual forums to conduct joint assessment; make policy-relevant recommendation; publish reports; 1 workshop/yr, USD15,000x3, consultant 1pm (see governance action)	
MA 8-3: Forecast ecosystem changes in the long-term scale	**Make regional strategies for long-term ecosystem forecasts**	establish expert group	
		Compare existing models; Devise strategies for integration of circulation-ecosystem model; workshop 15000; consultant 1pm	23,000
	Develop regional models	Develop regional circulation-ecosystem models, consultant 2pm (combine with above+ PMO)	
	Make forecasts	Develop regional scenarios; workshop 15000	15,000
		Produce mid- & long-term forecasts; verify the results; workshop 15000; consultant 1pm	23,000
	Assessment & dissemination	Interpret & disseminate forecasts using YSLME data server	

	Activities	Implementation	Budget requested from GEF
MA 8-4: Monitor the transboundary impact of jellyfish blooms	**Create regional jellyfish monitoring program**	Create regional committee to coordinate monitoring and assessment.	30,000
		develop national and regional monitoring methodologies of jellyfish blooms; see Governance action	
		Link and coordinate existing national jellyfish monitoring programs; see Governance action	
	Conduct regular jellyfish monitoring activities	Conduct monitoring of jellyfish blooms	
	Asses the status, trend and damage of jellyfish blooms	Hold annual forums to conduct joint assessment; make policy-relevant recommendation; publish reports; 1 workshop/yr, USD15,000x3, consultant 1pm/yr (see governance action)	
MA 8-5: Monitor HAB occurrences	**Create regional HAB (including macroalgae) monitoring program**	Create regional committee to coordinate monitoring and assessment. Combine with jellyfish committee	10,000
		develop national and regional monitoring methodologies of HAB; *see Governance action*	
		Link and coordinate existing national HAB monitoring programs; *see Governance action*	
	Conduct regular HAB monitoring activities	Conduct monitoring of HAB	
	Asses the status, trend and damage of HABs	Hold annual forums to conduct joint assessment; make policy-relevant recommendation; publish reports - combine with jellyfish??	
Governance Actions	**Establish a comprehensive regional monitoring system**	Develop regional monitoring strategies for N/P/Si changes, climate change, jellyfish blooms, and HAB; consultants (2+PMO)pm	16,000
		Hold a conference to review and link exisiting monitoring network; workshop with participation of 50 regional and international experts; USD70,000 (combine with previous meetings)	70,000
		Annual forums to conduct joint assessment, 15,000x3	45,000
Project Management	**project staff**		204,872
	Travel		23,175
	UNOPS 6%		31,203
			551,250

ANNEX V

ECOSYSTEM COMPONENT'S WORKPLAN FOR 2009

Activity	Action	Timeline / Deadline
OC 2008	Final meeting and results delivery	mid Jan. 2009
Primary productivity estimation		
	progress report	Sept. 2008
	final report	15 Feb. 2009
Co-operative cruises		
Component reports - summer	each team	end Jan. 2009
Regional report	Chief Scientists	end Apr. 2009
Winter cruise data available to the public through project DB	each team & CKJORC	before 2nd RSC, Nov. 2009
Summer cruise data available to the public through project DB	each team & CKJORC	before project ends
SAP Demonstration Activities		2008 - 2009 (results to be reported at 2nd RSC)
Jellyfish bloom	consultants	Dec. 2009
N:P:Si changes	consultants	Dec. 2009
climate change impacts	consultants	Dec. 2009
NSAP		
drafting NSAP	NPC and national members	before end 2008
govt approval of NSAP	govt	before end 2008
Project Phase 2 preparations		
Working Session #2		5-6 Oct. 2008
Supporting services inputs to PIF		completed at 5th RWG-E Meeting
6th RWG-E Meeting/2nd RSC	PMO will arrange	Nov. 2009, TBD

List of Acronyms

CDOM	coloured dissolved organic matter
CKJORC	China-Korea Joint Ocean Research Center
CPR	continuous plankton recorder
DB	database
DO	dissolved oxygen
FIO	First Institute of Oceanography (China)
HAB	harmful algal bloom
NFRDI	National Fisheries Research and Development Institute (ROK)
NSAP	National Yellow Sea Action Plans
OC	ocean colour
PIF	Project Identification Form
PMO	Project Management Office
PSC	Project Steering Committee
ROK	Republic of Korea
RSC	Regional Science Conference
RWG-E	Regional Working Group - Ecosystem
SAP	Strategic Action Programme
TSM	total suspended matter
UNDP/GEF	United Nations Development Programme / Global Environment Facility
UNOPS	United Nations Office for Project Services