





About this publication:

This publication contains the report of the Fifth Meeting of the Regional Working Group for the Pollution 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 pollution management actions (regulating & cultural services) for the Strategic Action Programme (SAP) were reviewed, and mechanisms suggested for their implementation in the potential 2<sup>nd</sup> 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:

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# REDUCING ENVIRONMENTAL STRESS IN THE YELLOW SEA LARGE MARINE ECOSYSTEM

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

**Xiamen, China, 8 - 10 October 2008**





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

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UNDP/GEF/YS/RWG-P.5/3  
Date: 10 October 2008  
English only

**Fifth Meeting of the Regional Working Group  
for the Pollution Component**  
*Xiamen, China, 8 - 10 October 2008*

**Meeting Report**



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## **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 Xiamen.
- 1.1.2 Ms. Chiang gave an update of the project progress, namely the finalisation of the draft SAP, and stated that this meeting would focus on reviewing the current activities and the remaining tasks needed to plan for the SAP's implementation. She mentioned that the co-operative cruises were successfully carried out, and the meeting would discuss the available results from the cruises.
- 1.1.3 Mr. WEN Quan, Chairperson of the RWG-P, welcomed all participants to Xiamen, and mentioned that a lot of work is needed to be done over the next few days to review on-going activities such as the SAP demonstration activities and plan for the project's next phase.
- 1.1.4 Ms. YU Tao, Deputy Director, TIO, welcomed all participants to Xiamen, and gave a brief introduction on her institute's work dealing with marine chemistry, physical oceanography, marine geology and coastal engineering. She mentioned TIO's involvement with the UNDP/GEF's project on biodiversity of China's southern seas. From this project, UNDP/GEF, NOAA, and SOA jointly established a training centre at TIO. She hoped that, through co-operation with YSLME Project, TIO can learn and exchange experiences.
- 1.1.5 Mr. YANG Dong Beom, on behalf of ROK participants, thanked TIO for making the lovely arrangements for the meeting.

### **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.5/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.5/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.5/1) and Provisional Annotated Agenda (Document UNDP/GEF/YS/RWG-P.5/2) 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 5<sup>TH</sup> RWG-P MEETING**

4.1 The Chairperson invited the Secretariat to present the expected outputs of the meeting (Document UNDP/GEF/YS/RWG-P.5/4). 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 for planning the project's next phase to implement 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 Winter and Summer Co-operative Cruises - Pollution Component**

5.1.1 Mr. Yang presented the results of the co-operative cruises analysed by ROK scientists. He showed the sampling stations, and winter cruise results of seawater and sediment for nutrients, metals, organic compounds, grain size and suspended solids. In general, PO<sub>4</sub> was higher in the southern part, and N higher in the northern part. Due to severe weather during the winter cruise, inter-calibration could be carried out at only 1 station, thus the results cannot be compared too well.

5.1.2 Mr. Yang also explained that there were some differences in analytical methodologies between the countries, resulting in some differences in results between the 2 countries.

5.1.3 From the summer cruise, low nutrient concentrations were observed in the surface due to stratification. Higher concentrations were observed in the bottom depths due to the strong thermocline. Mr. Yang finally noted that Si in the surface was high in the coastal areas of ROK.

5.1.4 Mr. YAO Ziwei showed the comparison of winter cruise data from ROK and China carried out at Station G3, for the participant's reference.

5.1.5 Mr. Wen, on behalf of Ms. Wang Juying, presented the winter cruise results for nutrients, Si, organic compounds, and metals, and some results from the summer cruise. He noted that Pb was high in the middle areas of YS, and that Co results needed more investigation. From the summer cruise, P data in surface waters needed more investigation. Mr. Wen also gave some recommendations for future work:

- data quality needs further checking;
- further analyses on data is needed for better understanding of the status and trends of the Yellow Sea;
- integrate data with ecosystem group's results; and
- report any new knowledge from the 2 cruises.

5.1.6 The discussion focused mainly on the differences in results and how to resolve them. Mr. Yang talked about his experiences in conducting similar international studies, where the results were sometimes very different, but there are solutions to resolve these issues. Compared to other similar studies, the differences from the cooperative cruises are relatively small; thus the cruises should be viewed as successful events. Ms. Choi suggested that the units for reporting should be unified.

5.1.7 Ms. Chiang thanked the ROK scientists for their patience in awaiting the summer cruise samples to be shipped from Qingdao. Ms. Chiang also mentioned that the base map using Surfer software had been finalised and would be distributed to all cruise scientists for graphical presentation of results.

5.1.8 Mr. Yang informed the meeting that all analyses for which ROK was responsible would be completed by the end of the year.

5.1.9 Finally, participants recommended that a final cruise reporting workshop should be held next year to solve the problems of inter-calibration and to compile all data to assist the Chief Scientists in writing up the regional cruise report. **The PMO agreed to examine the project budget and look into the feasibility of holding the workshop.** This issue was discussed further under Agenda 7.

## **5.2 Monitoring and Assessment Workshop, Shenyang, China**

5.2.1 Mr. ZHANG Zhifeng reported on the marine assessment workshop held in Shenyang, China, May 2008. The workshop provided a forum to improve techniques and methods of assessment, experience and idea exchange, and cross learning. Topics on eutrophication, assessment strategies, monitoring of hazardous substances, case studies, and related policies were presented. The workshop's discussion session included topics such as monitoring for specific purposes, communication and information dissemination, assessment of trends, N:P:Si ratio.

5.2.2 Mr. Wen emphasised the importance of monitoring and assessment and suggested that during the cruise summary workshop next year, PMO should consider inviting some of the assessment workshop experts to assist in data interpretation.

## **5.3 Capacity Building for Analysis of Nutrients, Trace Metals, and Organics**

5.3.1 Ms. Chiang summarised the capacity building activities on inter-calibration and visits to FSS and IAEA-MEL. She provided information on the on-going inter-calibration exercises for nutrients, metals, and organics which have recently started. She also provided information on the scientists' visits to FSS and IAEA-MEL to increase analytical capacities and learn about other issues.

5.3.2 Mr. Zhang participated in the visit to FSS for nutrients analyses and provided some insight into the experience, saying that although he had to work very hard during the training course, it was very useful for the trainees, and that he would apply the new knowledge to his current work.

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

### **5.4.1 Atmospheric deposition monitoring and assessment**

5.4.1.1 Mr. YAO Ziwei presented this SAP demonstration activity's progress, mentioning the main tasks to monitor, assess, evaluate atmospheric deposition, and transfer knowledge to policy makers. He showed the variables that will be monitored, and the methods to carry out the work. The activity will calculate the amount of contaminants, evaluate major sources of PAHs, and evaluate atmospheric contribution to the overall trace metal and nutrients input in the study area. Island sampling sites will be compared with polluted land areas to determine if pollution is from land or sea. The activity may also suggest improved monitoring methods and inform them to policy makers.

5.4.1.2 Mr. Yang informed the meeting that he has some atmospheric deposition data from ROK's side, and is willing to compare and share the data.

### **5.4.2 Calculation of nutrient loads in hotspots**

5.4.2.1 Mr. Zhang presented the activity which is being implemented in the Yalu River basin, estuary, and coastal area of Dandong City. This site suffers from nutrients and oil as the main pollutants, with frequent HAB occurrences. The activity will examine pollutants from land- and sea-based sources, identify major nutrient sources, and use models to estimate total loading.

5.4.2.2 Ms. Choi suggested to co-ordinate with Mr. Yao on the modelling, as both activities have some similarities. Mr. Zhang accepted the suggestion.

### **5.4.3 Monitoring and assessment of sea-based sources of nutrients**

5.4.3.1 Ms. LI Ai presented the progress of this activity, listing the objectives and progress to date. She mentioned that historical data was reviewed, and a summer survey of mariculture ponds and bays in the area had been carried out. She showed some preliminary water quality data of N, P, and Si in mariculture farms and in the bay. The nutrients were higher in the ponds than in the bay.

5.4.3.2 The activity has also investigated community structure and phytoplankton diversity in the bay. Future work will include additional surveys and transfer of knowledge for policy making.

**5.4.3.3** The ensuing discussion mainly focused on using models to calculate nutrient loading. It was recognised that calculating total nutrient loading is difficult; therefore, empirical models and coefficients will be used. Because the above 3 activities all involve modelling, and have some overlaps, it was suggested that an integrated model could be produced to estimate nutrient loadings from various sources. At the same time, individual models could be produced to target each site. **Mr. Zhang agreed to co-ordinate the modelling activities among the 3 activities before the final results are informed to policy makers.**

5.4.3.4 Mr. SHIN Kyung Hoon expressed his interest to see the activity results displayed at the science conference next year. The science conference was further discussed in Agenda 8.

#### **5.4.4 Management demonstration for recreational waters**

5.4.4.1 Ms. HU Yingying presented the geographical scope, progress and results, future work, and expected results. Information on faecal coliform, *Enteromorpha*, marine litter, and jellyfish were given. The current existing monitoring programme will be revised to be more relevant to the needs of monitoring water quality of recreational waters.

5.4.4.2 Ms. Hu duly answered the various questions raised:

- In preparation for the Olympic games, Qingdao city closed many direct discharge outlets near the beach, thus water quality improved from 2002 to 2005. However, from 2005 to 2008, faecal coliform increased due to green algae bloom every year, with a particularly serious case in 2008.
- When the monitoring programme is changed based on results from the activity, the frequency of monitoring will be changed, and additional indicators will be included.

#### **5.4.5 Cross-component (pollution-biodiversity) demonstration activity**

5.4.5.1 Ms. Chiang updated everyone on the cross component demonstration activity of which the proposals are currently being reviewed. She provided a brief background on this activity, where some regional scientists felt that such an activity was necessary to manage pollution in critical habitats. The PMO will soon make a decision on which proposal to fund, and will inform everyone of the outcome.

5.4.5.2 Following all the information given on SAP demonstration activities, Ms. Chiang reminded the meeting that these activities need to show the benefits and effectiveness of the management actions. She emphasised that when reporting the results, especially to policy makers, the consultants of the activities should highlight to policy makers why such actions are needed and how best to implement them.

5.4.5.3 Finally, Mr. Isao ENDO explained that the SAP demonstration activities on cost-benefit analysis (CBA) of the project's demonstration activities were recently advertised. He informed the participants that the consultants for CBA might contact the pollution demonstration activity leaders for further details when the economic assessments are being carried out.

### **6 SCIENTIFIC AND TECHNICAL INPUTS FOR THE 2<sup>ND</sup> PHASE PROJECT DOCUMENT**

#### **6.1 Review Management Actions**

#### **6.2 Activities required under each management action**

#### **6.3 Inputs for 2<sup>nd</sup> Phase Project Document - details of how each management action should be implemented**

6.1.1 The Chairperson invited Ms. Chiang to introduce this agenda item, whereby the meeting was informed of the background and progress of planning for project phase 2. The Phase 2 Working Group was established following the directive from the PSC and had held 2 sessions already. Ms. Chiang very briefly explained the theme of the SAP, phase 2 would be implementation of the SAP, and how the table of activities was prepared based on the SAP.

- 6.1.2 The participants were requested to review the proposed activities, refine, and revise the activities if necessary. Participants did not need to deal with the activity costs; however if new activities were suggested, then the overall cost for the Pollution component would have to be considered.
- 6.1.3 Two sessional working groups were formed to review the table of activities, and reported their modifications back in the plenary session.
- 6.1.4 Mr. Endo provided an explanation of economic analyses of the management actions, and the rationale and need for such activities. He enquired whether the group felt that it would be necessary to include economic assessments. Following some thought and discussion on this issue, **the meeting agreed to include economic analyses as an activity, and requested approximately 2 person-months' funding.** The 5<sup>th</sup> RWG-I Meeting will be requested to consider the request from this group and allocate some funding from the governance section for the Pollution group.
- 6.1.5 The revised 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 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**

- 7.2.1 Participants reiterated the need for a cruise summary workshop to present the final resolutions on inter-comparison results and discuss the regional report with the ecosystem group and Chief Scientists. **Participants agreed to start exchanging data from January 2009 to examine the inter-comparison results, and finalise all issues during the summary workshop.** Participants also suggested to hold the workshop in mid-February 2009 for 2-3 days. They also suggested to invite approximately 7 scientists from the pollution group. **The PMO agreed to inform the Ecosystem group of this new activity, and will update both groups on the progress of arranging this workshop.**

## **8 WORKPLAN FOR 2009**

- 8.1 During the discussions on the workplan, participants suggested to hold a summary workshop for the current rounds of inter-calibration exercises. Because of limited budget, this workshop was recommended to be held immediately before or after the cruise summary workshop.
- 8.2 **Based on the activities discussed during the course of the meeting, members created and agreed on a workplan for 2009, for submission to and approval by the next PSC Meeting (Annex V).**

## **9 PROPOSED CANCELLATION OF 6<sup>TH</sup> RWG-POLLUTION MEETING FOR THE 2<sup>ND</sup> 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 meetings, 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 mid October 2009.**

9.3 Participants suggested the following topics and speakers could be considered for inclusion in the science conference:

- SAP demonstration activities, including the cross-component activity (5 speakers)
- NSAP (2)
- Co-operative Cruises – basin-wide presentations (1-2 talks). This will be discussed further at the cruise summary workshop.
- A few invited speakers from outside the region (2)
- CBA of demonstration activities (1)
- Some partners

9.4 Thus, the meeting suggested to invite at least 10 speakers for pollution-related topics. The meeting also suggested that Mr. Shin Kyung Hoon and Ms. Wang Juying might serve as the conference organising members.

## **10 OTHER BUSINESS**

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

10.2 Members did not raise any other issues.

## **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 Ms. Choi thanked the Chairperson for his leadership over the past 4 years.

12.2 Ms. Chiang thanked all members and participants for their contributions to the project and planning for the next phase. She looked forward to seeing the results of the SAP demonstration activities next year at the science conference.

12.3 Mr. Wen reflected on all the good memories and past meetings this group held. He thanked all members, the PMO, and demonstration activity consultants, and looked forward to seeing new results from the co-operative cruises results and the exchange

of data and information. Finally, he thanked all participants for their efforts towards the conservation of the Yellow Sea.

- 12.4 Following the closing statements, the Chairperson declared the meeting closed on 10<sup>th</sup> October 2008.



**Annex I****List of Participants****MEMBERS****People's Republic of China****Mr. WEN Quan (Chairperson)**

SOA Key Lab of Coastal Ecosystem and  
Environment Research  
National Marine Environmental Monitoring  
Center  
42 Linghe Street  
Dalian 116023  
Tel: 86-411-8478-2582  
Fax: 86-411-8478-2582  
Email: [gwen@nmemc.gov.cn](mailto:gwen@nmemc.gov.cn)

**Mr. YAO Ziwei**

Division of Quality Control and Assurance  
National Marine Environmental Monitoring  
Center  
42 Linghe Street  
Dalian 116023  
Tel: 86-411-8478-2580  
Fax: 86-411-8478-2522  
Email: [zw Yao@nmemc.gov.cn](mailto:zw Yao@nmemc.gov.cn)

**Mr. ZHANG Zhifeng**

Marine Environmental Chemistry  
National Marine Environmental Monitoring  
Center  
42 Linghe Street  
Dalian 116023  
Tel: 86-411-8478-2732  
Fax: 86-411-8478-2586  
Email: [zfzhang@nmemc.gov.cn](mailto:zfzhang@nmemc.gov.cn)

**Republic of Korea****Mr. YANG Dong Beom**

Principal Research Scientist  
Korean Ocean Research and Development  
Institute  
1270 Sa-dong Sangnok-gu Ansan-si  
Gyeonggi-do 426-744  
Tel: 82-31-400-6157  
Fax: 82-31-408-4493  
Email: [dbyang@kordi.re.kr](mailto:dbyang@kordi.re.kr)

**Ms. CHOI Hee-Gu**

Senior Scientist  
National Fisheries Research &  
Development Institute (NFRDI)  
408-1, Sirang-Ri, Gijang-eup, Gijang-gun  
Busan, 619-902  
Tel. 82-51-720-2530  
Fax. 82-51-720-2515  
Email: [hqchoi@nfrdi.go.kr](mailto:hqchoi@nfrdi.go.kr)

**Mr. SHIN Kyung Hoon**

Associate Professor  
Hanyang University  
1271, Sa 1dong, Sangrokgu  
Ansan 426-791  
Tel: 82-31-400-5536  
Fax: 82-31-416-6173  
Email: [shinkh@hanyang.ac.kr](mailto:shinkh@hanyang.ac.kr)

## CONSULTANTS

### Ms. LI Ai

Research Assistant  
Liaoning Ocean and Fisheries Science  
Research Institute  
50, Heishijiao Street  
Dalian, China 116023  
Tel: 86-411-8469-1603  
Fax: 86-411-8467-1027  
Email: [bruce\\_qi@163.com](mailto:bruce_qi@163.com)

### Mr. WANG Nianbin

Senior Researcher  
Liaoning Ocean and Fisheries Science  
Research Institute  
50, Heishijiao Street  
Dalian, China 116023  
Tel: 86-411-8469-1603  
Fax: 86-411-8467-1027  
Email: [wang\\_nb0415@yahoo.com.cn](mailto:wang_nb0415@yahoo.com.cn)

### Ms. HU Yingying

Marine Environmental Chemistry  
National Marine Environmental Monitoring  
Center  
42 Linghe Street  
Dalian 116023  
Tel: 86-411-8478-2523  
Fax: 86-411-8478-2586  
Email: [yyhu@nmemc.gov.cn](mailto:yyhu@nmemc.gov.cn)

## PARTICIPANTS

### Mr. LI Hu

Secretary of International Co-operation Office  
Division of S&T Development  
Third Institute of Oceanography  
State Oceanic Administration (SOA)  
178 Daxue Road  
Xiamen, Fujian, China 361005  
Tel: 86-592-219-5223  
Mobile: 86-159-6022-1365  
Fax: 86-592-208-6646  
Email: [lihusea@vip.sohu.com](mailto:lihusea@vip.sohu.com)

### Ms. WAN Li

Associate Professor  
Dalian Fisheries University  
52, Heishijiao Street, Shahekou District  
Dalian 116023  
China  
Tel: 86-411-8476-2602  
Fax: 86-411-8467-6914  
Email: [xue\\_er29@yahoo.com.cn](mailto:xue_er29@yahoo.com.cn)

### Ms. YU Tao

Deputy Director  
Third Institute of Oceanography  
State Oceanic Administration (SOA)  
178 Daxue Road  
Xiamen, Fujian, China 361005  
Tel: 86-592-219-5366  
Fax: 86-592-208-6646  
Email: [ghkf9712@126.com](mailto:ghkf9712@126.com)

**PROJECT MANAGEMENT OFFICE (PMO)**

**Ms. Connie CHIANG**

Environment Officer  
UNDP/GEF Yellow Sea Project  
Korea Ocean Research and Development  
Institute  
1270 Sa-dong Sangnok-gu Ansan-si  
Gyeonggi-do 426-744  
Republic of Korea  
Tel: 82-31-400-7833  
Fax: 82-31-400-7826  
Email: [connie@yslme.org](mailto:connie@yslme.org)

**Mr. Isao ENDO**

Environmental Economics Officer  
UNDP/GEF Yellow Sea Project  
Korea Ocean Research and Development  
Institute  
1270 Sa-dong Sangnok-gu Ansan-si  
Gyeonggi-do 426-744  
Republic of Korea  
Tel: 82-31-400-7793  
Fax: 82-31-400-7826  
Email: [isao@yslme.org](mailto:isao@yslme.org)

**Mr. Sungjun PARK**

Finance & Administrative Officer  
UNDP/GEF Yellow Sea Project  
Korea Ocean Research and Development  
Institute  
1270 Sa-dong Sangnok-gu Ansan-si  
Gyeonggi-do 426-744  
Republic of Korea  
Tel: 82-31-400-7828  
Fax: 82-31-400-7826  
Email: [sungjun@yslme.org](mailto:sungjun@yslme.org)



## Annex II

### List of Documents

#### Working Documents

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

#### Information Documents

UNDP/GEF/YS/RWG-5/inf.1	Provisional List of Documents
UNDP/GEF/YS/RWG-P.5/inf.2	Provisional List of Participants
UNDP/GEF/YS/RWG-P.5/inf.3	Provisional Working Programme for the Meeting
UNDP/GEF/YS/RWG-P.4/3	Report of "Fourth Meeting of the Regional Working Group for the Pollution 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 "5 <sup>th</sup> 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 5<sup>TH</sup> RWG-P MEETING**
- 5. REVIEW OF COMPLETED AND ON-GOING POLLUTION COMPONENT ACTIVITIES**
  - 5.1 Winter and Summer Co-operative Cruises - Pollution Component
  - 5.2 Monitoring and Assessment Workshop, Shenyang, China
  - 5.3 Capacity Building for Analysis of Nutrients, Trace Metals, and Organics
  - 5.4 Contribution to the preparation of the Strategic Action Programme (SAP) - Demonstration Activities
    - 5.4.1 Atmospheric deposition monitoring and assessment
    - 5.4.2 calculation of nutrient loads in hotspots
    - 5.4.3 Monitoring and assessment of sea-based sources of nutrients
    - 5.4.4 Management demonstration for recreational waters
    - 5.4.5 Cross-component (pollution-biodiversity) demonstration activity
- 6. SCIENTIFIC AND TECHNICAL INPUTS FOR THE 2<sup>ND</sup> PHASE PROJECT DOCUMENT**
  - 6.1 Review Management Actions
  - 6.2 Activities required under each management action
  - 6.3 Inputs for 2<sup>nd</sup> 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 6<sup>TH</sup> RWG-POLLUTION MEETING FOR THE 2<sup>ND</sup> REGIONAL SCIENCE CONFERENCE**
- 10. OTHER BUSINESS**
- 11. ADOPTION OF THE MEETING REPORT**
- 12. CLOSURE OF THE MEETING**





**Annex IV**

**Pollution Component's Table of Activities for Project Phase 2**

	<b>Activities</b>	<b>Implementation</b>	<b>Budget requested from GEF</b>
<b>MA 4-1: Conduct intensive monitoring and assessment</b>	<b>establish regional monitoring guideline and network based on any existing ones</b>	harmonise regional methodology, and update regional monitoring guideline, and consultant 2 pm	16,000
		working group develop regional monitoring programme, 2 sessions	20,000
		implement regional monitoring programme by country,	16,000
		and consultant for regional QA/QC & inter-calibration exercises (lab and field), 3 chemical groups 2x	20,000
		data & information exchange mechanism, including establish e-forum & 1 workshop	
	<b>diagnostic strategy for ID sources &amp; sinks of pollutants</b>	review available data & info, consultant 1pm	8,000
		working group to evaluate sources and sinks of pollutants & produce strategy	
	<b>reporting environmental status &amp; trends of Yellow Sea</b>	consultant to update regional synthesis, 1pm	8,000
<b>MA 4-2: Control contaminants discharge with reference to Codex alimentarius</b>	<b>develop basin-wide strategy to control contaminants</b>	consultant + PMO 1pm * 8000	8,000
		Cooperation with relevant ecoregion project, e.g. WWF's projects	

and Stockholm Convention	Activities	Implementation	Budget requested from GEF
	evaluation of facilities and equipment to control/reduce discharge from industrial and municipal sources	national consultants	
	regional assessment and update of contaminant sources and fate(moved to 4-1 and combined with line 10)	regional working group to update sources and fate	15,000
		monitoring sources and fate, 3 sites (nat'l and/or combine with other monitoring from sea, atm, land) MA5-2	
	develop economic instruments to reduce pollution	consultant to review existing instruments and give recommendations 1pm	8,000
		implement pilot projects to apply economic instruments, 3 sites	30,000
	develop regional protocol for dumping at sea	<del>consultant review guidelines for selecting dumping sites, &amp; harmonise assessment methods for dumping sites 3pm</del>	
		<del>harmonise assessment methods for dumping sites, working group</del>	
<b>MA 4-3: Implementing MARPOL 1973/78 effectively</b>	improve regional strategy for oil spill	working group to update strategy (share with NOWPAP)	10,000
	joint exercises on implementing contingency plans	1 demonstration	40,000
		Sharing D & I with NOWPAP, IMO for oil transportation: oil type, quantity, source, traffic route...	
	improve management of ballast water to avoid introducing exotic species	site: demonstrate monitoring & assessment to improve management procedures	20,000

	<b>Activities</b>	<b>Implementation</b>	<b>Budget requested from GEF</b>
	<b>using alternative energy and technology transfer to reduce CO2 discharge from vessels</b>	technology transfer from developed countries, 1 pilot project	
<b>MA 5-1: Control total loading from point sources (reduce 10% total nutrient loading)</b>	<b>improve control mechanism of pollution from point sources</b>	consultant review & recommend 1 +PMO pm * 8000	8,000
	<b>Support for pilot intensive monitoring (hot spots/ critical habitats) including input sources and loads of sewage, and aquaculture</b>	3 pilot sites (combine the monitoring with MA5-2)	
	<b>Support to monitor &amp; calculate nutrient loading in hot spots/ critical habitats</b>	3 pilot projects for development of total quality control methodology, with best available techniques	40,000
	<b>develop wastewater treatment plan for reduction of nutrients loads</b>	working group review existing plans	15,000
		review existing waste treatment facilities & give recommendations to improve (with above)	
	<b>Implement improvement of wastewater &amp; sewage treatment facilities</b>	2 sites (national)	
	<b>MA 5-2: Control total loading from non-point sources and sea-based sources</b>	<b>Support for monitoring &amp; reducing atm-based</b>	1 site inst. Contract 2yrs monitoring
<b>Support for monitoring, reducing, &amp; improving fertiliser use</b>		1 site inst. Contract 2yrs monitoring	40,000
<b>Support for monitoring &amp; reducing sea-based</b>		1 site inst. Contract 2yrs monitoring	40,000
<b>development of storm water treatment system</b>		consultant to give recommendations 2pm * 8000	
<b>Establish &amp; implement programme to control total nutrient loading</b>		national commitments	

	<b>Activities</b>	<b>Implementation</b>	<b>Budget requested from GEF</b>
<b>MA 5-3: Apply new approaches for nutrient treatment</b>	<b>promote wetlands as nutrient sinks</b>	develop regional strategy for using wetlands as nutrient sink, consultant 1pm	8,000
		local govt officer's study tour to 1 site in China, 2 days/site, 6 pers/site	
	<b>Create more wetlands as nutrient sink</b>	national commitments	
	<b>transfer new technology for treating nutrients in wastewater</b>	1 pilot project	15,000
	<b>cost-effective and sustainable mechanism to treat municipal wastewater &amp; sewage</b>	1 consultant1 + PM0 pm give regional recommendations	8,000
		1 pilot project	
<b>Governance Actions</b>	<b>establish mechanism for discussing regional level data exchange</b>	working group to improve understanding of environmental capacity & promote best available techniques and new technology	15,000
		experts exchange: exchange info on management of fertiliser use and control of sea-based sources of pollutants	
	<b>Review environmental quality standards (3rd year)</b>	1 consultant to review and recommend; workshop to transfer findings	8,000
	<b>Stakeholder workshop to transfer new findings</b>	1 in-country / country	
	<b>Economic analysis</b>	2.5PM	
	<b>Evaluation of SAP and NSAP implementation</b>	3 consultants x 1mth x 8000	
	<b>Co-ordinating YSLME sub-commission to ensure SAP implementation</b>	3-days, 5 yrs, 10 pers	

	<b>Activities</b>	<b>Implementation</b>	<b>Budget requested from GEF</b>
<b>MA 6-1: Control source of litters and solid wastes</b>	<b>Waste management</b>	regional review of current policies & regulations, consultant 1+ PMO pm * 8000	8,000
		national review of polices & regulations	
		improve municipal waste collection regulation & collection system (natl)	
	<b>technologies for waste reduction, reuse, recovery</b>	regional review of current technologies for waste reduction, reuse, recovery, consultant 1pm* 8000	8,000
		recommend clean production technologies, consultant above	
		technology transfer from developed countries, 1 site	10,000
	<b>recycling economy</b>	recommendations & pilot projects for regional recycling economy, 3 sites	15,000
<b>MA 6-2: Improve removal of marine litter</b>	<b>implement regional baseline survey and pilot monitoring programme on marine litter</b>	working group for survey design	10,000
		baseline survey, 1 cruise / cty	60,000
		develop coastal monitoring activities, consultant 1pm (Using existing ones)	
		pilot coastal waters monitoring, 3 sites	
		pilot beach monitoring, sites as above	20,000
		assessment and dissemination of information to relevant agencies, organisations, e.g. NOWPAP (secretariat will disseminate)	

	<b>Activities</b>	<b>Implementation</b>	<b>Budget requested from GEF</b>
	<b>implementing programmes for cleaning marine litter</b>	enhance public-private partnerships on reducing waste production and disposal, 1 demo site SGP	10,000
		implement regular community-based approach for removing marine litter, 1 demo site as SGP	10,000
<b>MA 6-3:</b> Increase public awareness of marine litter	<b>marine litter included in school curriculum</b>	develop and implement pilot programme for inclusion in school curriculum, nat'l	
	<b>improve publicity of marine litter issues</b>	support & continue efforts through YSP and other existing programmes	
	<b>production of information packages</b>	contract groups to design and distribute	20,000
<b>MA7-1:</b> Conduct regular monitoring, assessment and information dissemination particularly in bathing beaches and other recreational waters	<b>Regional assessment of existing measures, including Harmonise measurement techniques</b>	(1 consultant x 2 pers mths x 8000) + (1 reg'l mtg X 15,000)	8,000
	<b>Support for regular monitoring, info dissemination, and beach signage</b>	1 site / cty (national)	
	<b>Review, develop, improve nationally accepted criteria/standards/monitoring technologies</b>	1 consultant x 2mth x 8000 (nat'l)	
	<b>Implement monitoring and assessment programme using improved criteria/standards</b>	1 site / cty (national)	
<b>MA 7-2:</b> Control pollution in bathing beaches and other marine recreational waters	<b>Develop &amp; test early warning system, reporting to relevant agencies</b>	1 consultant 1pm per 1 site / cty	8,000
	<b>Improve and implement early warning system in rec. area</b>	1 site / cty (combine with above)	

	<b>Activities</b>	<b>Implementation</b>	<b>Budget requested from GEF</b>
	<b>Enforcement of pollution discharge in test areas</b>	1 site / cty national sources	
<b>Governance Actions</b>	<b>Allocate funds for recycling enterprises</b>	consultant recommend to include in govt policy for investment plans, natl	
		incentives for industry participating in recycling enterprises, 3 sites	
	<b>Start-up for local recycling enterprises</b>	2 pilot projects @ 3,000each (see microfinance)	
	<b>Inclusion of envt. Awareness into nat'l plans</b>	1 consultant per cty x 2mths, natl	
	<b>Improve legislation governing sub-standard waters</b>	1 consultant x 3mths natl	
	<b>Harmonise international and regional guidelines on marine litter monitoring and assessment</b>	1 consultant x 1mth x 8000	8,000
	<del>Co-ordinating YSLME sub-commission to ensure SAP implementation</del>	<del>3 days, 5 yrs, 10 pers</del>	
	<b>Stakeholder workshop to transfer new findings</b>	1 in-country / country	
<b>Project Management</b>	<b>project staff</b>		456,613
	<b>Travel</b>		48,630
	<b>UNOPS 6%</b>		69,375
<b>Total</b>			<b>1,225,617</b>





**Annex V**

**Pollution Component's Workplan for 2009**

<b>Activity</b>	<b>Action</b>	<b>Timeline / Deadline</b>
<b>Inter-calibration exercises</b>		
Nutrients Round 3	on-going	before end 2009
Metals & Organics Round 2	on-going	before end 2009
IC Summary Workshop #2 (2 days)	PMO and labs	mid-Feb 2009 before or after cruise summary wkshp
<b>Co-operative cruises</b>		
Cruise summary workshop (2days)	PMO and cruise scientists	mid-Feb 2009
Regional report	Chief Scientists	
Winter cruise data submitted to project database	cruise scientists	before 2RSC in late 2009
Summer cruise data submitted to project	cruise scientists	before project ends
<b>SAP Demonstration Activities</b>		
		2008 - 2009
nutrient loading in hot spots	consultant	Dec. 09
atmospheric deposition	consultant	Nov. 09
sea-based sources	consultant	Nov. 09
recreational waters management	consultant	Dec. 09
cross-component poll-bio	consultant	Dec. 09
<b>NSAP</b>		
drafting NSAP	NPC and national members	2008
govt approval of NSAP	govts	end 2008/early 2009
<b>Project Phase 2 preparations</b>		
Working Session #2		Oct. 2008
Regulating and cultural services inputs to PIF		Oct/Nov. 2008
<b>6th RWG-P Meeting/2nd RSC</b>	PMO will arrange	mid Oct 2009



**List of Acronyms**

FSS	Forensic Scientific Services (Queensland, Australia)
GEF	Global Environment Facility
HAB	harmful algal bloom
IAEA-MEL	International Atomic Energy Agency - Marine Environment Laboratory
KORDI	Korea Ocean Research and Development Institute
MARPOL	International Convention for the Prevention of Pollution From Ships
NMEMC	National Marine Environmental Monitoring Center (China)
NOAA	National Oceanic and Atmospheric Administration (USA)
NSAP	National Yellow Sea Action Plan
PAH	polycyclic aromatic hydrocarbon
PMO	Project Management Office
PSC	Project Steering Committee
ROK	Republic of Korea
RWG-P	Regional Working Group – Pollution
SAP	Strategic Action Programme
SOA	State Oceanic Administration (China)
TIO	Third Institute of Oceanography (China)
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services
YS	Yellow Sea