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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-E.5/6  
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English only

**Fifth Meeting of the Regional Working Group  
for the Ecosystem Component**

*Taeon, Republic of Korea, 23 - 25 September 2008*

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

As the project is now in its final phase with the drafting process of the Strategic Action Programme (SAP) complete and awaiting final approval by the governments, planning for the implementation of the SAP needs to start. In order to attain GEF funding, PMO is developing the 2<sup>nd</sup> Phase Project Document and the initial PIF (Project Identification Form) document. For a successful proposal, PMO needs to identify the activities needed to implement each management action and the associated costs and sources of co-financing. To achieve this, members of the 5<sup>th</sup> RWG-Ecosystem meeting will:

1. Review and familiarise themselves with the SAP Ecosystem Management Actions (Supporting Services) ([Annex I](#)).
2. Identify activities required under each management action of Supporting Service's Target #8 ([Annex II](#)).
3. Suggest inputs for 2<sup>nd</sup> Phase Project Documents.

*Members should review the SAP management actions and suggest activities that are required to implement each action both by the countries and PMO.*



## Annex I

### SAP Ecosystem Management Actions

#### **Target 8: Better understanding and prediction of ecosystem changes for adaptive management**

##### **Management action 8-1: Assess and monitor the impacts of N/P/Si ratio change**

The basin-scale change of nutrient ratio has been observed in the Yellow Sea in the past decades<sup>26</sup>. Although such change could potentially impacts the ecosystem structure and productivity, and ECC, the consequent changes in the ecosystem are not assessed well. The long-term trend in the nutrient ratio and its impacts on the ecosystem structure should be monitored and assessed. For this, existing national monitoring and assessment methodologies need to be reviewed and harmonised.

##### **Management action 8-2: Assess and monitor the impacts of climate change**

There are many signs of global climate changes on regional scales. Certainly these changes will continue in the coming decades and exacerbate anthropogenic problems. The Yellow Sea ecosystem is anticipated to undergo fundamental changes in the future and its ECC shall change. For better management of the Yellow Sea ecosystem, basin-scale monitoring and assessment of the ecosystem status is necessary. For this, existing national monitoring and assessment methodologies need to be reviewed and harmonised. If necessary, sampling and assessment schemes should be improved.

##### **Management action 8-3: Forecast ecosystem changes in the long-term scale**

Climate-induced long-term changes in ecosystems, despite its devastating nature, cannot be managed by human. In such circumstances, forecasting the future changes and developing adaptive management scheme are the best strategy. Basic science and technologies exist for forecasting future changes of ecosystems, e.g., climate-ocean circulation models and ecosystem models. Regional efforts should be focused on integrating models and developing scenario-based projections for the future ecosystem changes.

##### **Management action 8-4: Monitor the transboundary impact of jellyfish blooms**

Recent outbreaks of jelly fish in the North-western Pacific is truly a transboundary problem in that reproduction occurs in the Yellow Sea or East China Sea and medusae spread out to the East Sea/Sea of Japan. These novel outbreaks not only cause damages to the fisheries but also indicate fundamental ecosystem changes. An international co-operation is required for proper monitoring and mitigation of jellyfish blooms on regional scale. This includes developing national and regional monitoring methodologies of jellyfish blooms

##### **Management action 8-5: Monitor HAB occurrences**

Continued eutrophication in the coasts of the Yellow Sea for the past decades resulted in increases in algal blooms since late 1980's. Although the frequency of algal blooms has not increased in recent years, monitoring these nuisance blooms should be continued for potential impacts to aquaculture, fisheries and public health. In addition the regional capability for HAB monitoring and mitigation needs to be improved.

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<sup>26</sup> C. Lin, Ning, X., Su, J., Lin, Y., and Xu, B., 2005. Environmental changes and the responses of the ecosystems of the Yellow Sea during 1976-2000. *Journal of Marine Systems*. **55**(3-4): p. 223-234.

### 5.4.1 Governance Action

- For monitoring the impacts of nutrient ratio change and climate change, establishing cross-basin monitoring network and implementing monitoring activities are crucial. For this, the following activities are necessary; to create regional committee to co-ordinate monitoring and assessment; to conduct routine monitoring; to hold annual meetings to conduct joint assessment.
- For ecosystem modelling activities and HAB assessment, the establishment of two regional science committees is necessary to co-ordinate these activities. These regional science committees will oversee further activities; to establish national science committees for integrative modelling activity; to hold regular regional science committee meetings; to co-ordinate HAB assessment activities.
- For monitoring jellyfish blooms, following actions are required; to establish international monitoring network; to develop regional monitoring strategy; to implement regional monitoring.
- Development of a regional framework is needed to incorporate the assessment into management policies for climate change impacts, HAB, and jellyfish blooms. Activities to achieve this goal include; the review of monitoring strategies in national management policy; the review of the existing policy making framework; and incorporation of assessment activities in management policy.
- Development of a framework to incorporate the forecasts of ecosystem change into management policy is recommended. Activities to achieve this goal include; a review of national management policy regarding climate changes and a revision of the national framework to incorporate forecasts of ecosystem change.
- Creation of a regional mechanism for co-operation (such as the YSLME commission) is recommended and strengthened national mechanisms for inter-agency co-ordination and between government agencies and stakeholders to share information on biodiversity and biodiversity management are needed.
- Improved legislation and enforcement to ensure that vulnerable and endemic species and critical habitats are protected are required as recommended in the Convention on Biological Diversity;
- Regional and national mechanisms for raising awareness of environmental issues and legislation should be improved and public involvement through educational programmes and the promotion of eco-tourism and ecotourism livelihoods should be encouraged.
- A regional conservation plan and strengthened national legislation on coastal habitat management (including MPAs) as agreed under the Convention of Biological Diversity in addition to the creation of appropriate enforcement bodies should be established.
- Clear national and regional guidelines on biodiversity monitoring and assessments of the benefit of biodiversity to the local economy and the effectiveness of management should be identified.
- Improved enforcement of international regulations on the introduction of non-native species in combination with a strengthening of national legislation on species introductions and the use of risk assessment procedures is recommended.

**Annex II**

**Sample Activities and Budget Table for Supporting Service**

Note: This table is a sample that will be used for the Phase 2 Working Session #1 (26-28 August 2008) to fill in activities and costs. Before the 5<sup>th</sup> RWG-E Meeting, an updated table with listed activities will be circulated to members.

			Activities	Implementation	Budget				
					GEF	National	Others		
Supporting Service	Target 8: Better understanding and prediction of ecosystem changes for adaptive management	MA 8-1: Assess and monitor the impacts of N/P/Si ratio change							
				MA 8-2: Assess and monitor the impacts of climate change					
				MA 8-3: Forecast ecosystem changes in the long-term scale					
				MA 8-4: Monitor the transboundary impact of jellyfish blooms					
		MA 8-5: Monitor HAB occurrences							



				Budget			
		Activities	Implementation	GEF	National	Others	
	MA Management Action 10-3: Control new coastal reclamation						
		MA 10-4: Promote public awareness of the benefits of biodiversity conservation					
	Target 11: Reduction of the risk of introduced species	MA 11-1: Control and monitor ballast water discharge					
		MA 11-2: Introduce precautionary approach and strict control of introduction of non-native species					
Governance Actions							
	Project Management						
	<b>Total</b>			<b>329,3674</b>	<b>540,000</b>	<b>2,082,000</b>	