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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-F.4/6  
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English only

**Fourth Meeting of the Regional Working Group  
for the Fisheries Component**  
*Seokcho, Republic of Korea, 7 - 9 November 2007*

**Preparation of Yellow Sea Strategic Action Plan (SAP)**

1. According to the overall workplan, the Project has begun developing the SAP. The “TDA/SAP Training Module” developed by UN’s TRAINSEACOAST network gives the definition of SAP as:

“a negotiated policy document which should identify policy, legal and institutional reforms and investments needed to address the priority transboundary problems. Endorsed at the highest level, it establishes clear priorities for action to resolve the priority problems which were identified in the TDA. The preparation of a SAP is a cooperative process among the countries of the region.”
2. Given the definition, the Project has now focused its activities over the next two years on those that will be relevant to the development of the SAP, including the regional and national SAPs, i.e. activities that will eventually lead to formation of management actions, some of which will be included in the pilot implementation phase during Project Year 5, for their feasibilities, efficiency and effectiveness in addressing Yellow Sea’s transboundary Fisheries problems.
3. During the SAP Consultation Meeting, Carrying Capacity of the Environment was adopted as the central linkage in the SAP and was defined as the Services delivered by the Yellow Sea Large Marine Ecosystem in term of Provisioning Services (fisheries, mariculture and other extractive goods), Supporting/Regulating Services (carbon sink, nutrient balance, ecosystem stability) and Cultural Services (tourism, education and religion).
4. A three-step approach is proposed: a) environmental problems, b) regional environmental targets, c) management actions. While it is suggested that these three steps are taken to develop the fisheries section of the SAP, all steps should be considered simultaneously:
  - a) Identification of Fisheries related problems;
  - b) Recommendation of realistic and achievable regional targets for fisheries assessment and management;

- c) And suggest sustainable actions for execution by political, technical, institutional, and legal bodies to address the causes of the fisheries problems as identified in the Causal Chain Analysis.

#### Identification of Fisheries related problems

5. For the Fisheries Component the primary concern is the decline in landings of many commercial species caused by:
- Over capacity in the fishing fleet;
  - Destructive fishing practices;
  - Illegal fishing;
  - And insufficient data for effective stock management.

For mariculture of primary concern is unsustainable mariculture practices caused by:

- Lack of concern for nutrient discharges;
- Over stocking with inappropriate species;
- And ineffective disease control

#### Ecosystem Quality Objectives or Regional Targets

6. During the First Ad Hoc SAP meeting experts outlined regional targets for all components.
7. For Fisheries and Mariculture:
- A 25-30% reduction in catch and fishing effort;
  - And introduction of sustainable mariculture, polyculture; optimisation of the species cultured and their distribution; and improvements in culture techniques.

*Members should review the suggested Regional targets and suggest possible improvements that may facilitate the either the understanding or the measurement of achievement*

#### Proposed Management Actions

8. During the Second Ad Hoc SAP Working Group Meeting, a small group of experts reviewed the regional targets and outlined the management actions that are needed in order to achieve the previously mentioned regional targets. The group began with listing the ideal management actions, then listing the existing or already planned actions, and finally, based on their expertise, generally determining what management actions might be feasible to achieve the targets.
9. For Fisheries these included
- Introduction of legislation to help cut fishing effort by >25% and catch by 25%;
  - Community based self regulation/management system;
  - Ecosystem based management;

- Introduction of measures to reduce the number of illegal fishing boats; clearer identification numbers and VMS for larger boats
- Improved frequency and coverage of fish stock survey to provide more informed guidance.
- More detail is available in Annex 1

For mariculture these included

- Increase implementation of Integrated Multi-trophic Aquaculture (IMTA)
- Roll out of limited water exchange aquaculture land based systems including recirculating systems. Improvement of artificial diets
- Develop diseases diagnosis and control techniques. Establish the network for diseases monitoring system.
- More detail is available in Annex 1

Because the SAP Ad-hoc Working Group consists of a limited number of experts, input from additional experts are needed, i.e. the RWG members.

Thus, members are invited to:

1. review the entire table of suggested management actions (Annex 1);
2. check that the “feasible management actions by 2020” really are technically feasible (See section below on Feasibility Studies); and
3. suggest possible improvements that may improve the clarity and ease of “feasible management actions” for implementation.

### Feasibility Studies

10. Before selecting and testing the management actions, each action’s technical feasibility, and political and social acceptance must be assessed. **The RWG will be responsible for assessing the technical feasibility of the proposed management actions.**

Following the clarification of the actions from above, the RWG members should review the actions and conduct feasibility study for each proposed action.<sup>1</sup> One approach to accomplishing this may be:

1. The experts should consider whether there is or will sufficient technical ability to perform the suggested action;
2. The experts could score the actions based only on technical ability: (1) Not possible (2) Unlikely (3) Likely or (4) Very likely;
3. The experts should provide a rationale for their selection;
4. The experts should also comment on the action in terms of institutional and political obstacles.

The Regional Working Groups for the Project Components should discuss the national proposals and provide comments and guidance to the National Working Groups.

National Working Groups are responsible for the relevant feasibility studies in the participating countries, and the study results will be reported to the members of the SAP Ad Hoc Working Group through PMO as outlined in the TOR.

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<sup>1</sup> Members need to review only the actions under “Feasible management actions by 2020” in Annex I.

### Proposed Demonstration Sites

11. During the Second Ad Hoc SAP meeting, experts drew up some guidelines to select: firstly which management actions should be selected for demonstration; and secondly how to choose the demonstration site (See Annex II).
12. **\*\*\*Prior to the 4<sup>th</sup> RWG-F Meeting, members are requested to review Annex I and the agreed "Selection Criteria for Demonstration Projects and Sites (Annex II)."\*\*\***

Based on the criteria and management action table, members are requested to come prepared to the meeting to suggest some actions that should be demonstrated and provide guidance on possible activities to demonstrate each action. Some examples of possible demonstration activities for fisheries/mariculture-related management actions might be:

- Monitoring of the effectiveness of closed seasons/areas
  - Rebuilding of stock through stock enhancement
  - Effectiveness of IMTA combined with Carrying capacity models on productivity and nutrient loading
  - Effectiveness of limited water exchange on nutrient reduction and productivity.
13. For guidance the RWG-Pollution demonstration activities are included in Annex III, this included brief methodology and expected outputs. Indicators of management success (Process indicator, stress reduction indicator and environmental status indicator as defined by the GEF) should also be identified.
  14. The proposed actions for demonstration will be advertised in a "Call for Proposals" that the PMO will put out in March 2008. The deadline for interested persons to submit proposal for demonstration activities is scheduled for end of May 2008. During June 2008, an external review panel will evaluate proposals and decide which ones to fund. Members are requested to suggest 3-5 neutral persons to serve as evaluators. Demonstration activities will then begin implementation soon after.
  15. The proposal submission format is attached as Annex III. Members may provide comments on the format if they wish.

### Schedule for SAP Preparation

16. The Second SAP Ad-Hoc Working Group Meeting agreed on the following schedule for SAP preparation:
  - SAP Drafting Group Meetings will be held in January 2008, March 2008, and May 2008.
  - Special RSTP and PSC Meetings will be convened in April 2008 to review the final draft of the SAP. Comments from these meetings will be incorporated by the Drafting Group into the final SAP document for governments to approve in the middle of 2008.
  - Drafting of the National Yellow Sea Action Plans (NYSAPs) is a national responsibility and should be coordinated by the NPCs in their respective country. NYSAPs will be developed during 2008, and are expected to be ready for government approval sometime in 2008.

Expected results from the meeting

17. In summary, during the consideration of this Agenda, members should discuss and agree on :
- Regional Fisheries targets;
  - Fisheries Management actions;
  - Conduct technical feasibility study on the actions;
  - And suggest management actions to be demonstrated.



## Annex I – Proposed Fisheries Management Actions.

Problems identified in CCA	Regional target (2020)	General action	Ideal Management Action			Analysis of Planned & On-going Management Actions			Feasible Management Actions by 2020			Technical Feasibility	Remark
			Technical	Institutional	Legislative	Technical	Institutional	Legislative	Technical	Institutional	Legislative		
Decline in landings of many commercially-important species	25-30% reduction in catch and fishing effort (2004)	Reduce no. of boat/power	<b>Data linkage between the reduction in fishing effort and the fish biomass. Boat buy-back and control of new boat building. Reduction of fishing effort to optimum level keep biomass at biological safety</b>	<b>Creation of alternative livelihoods until all ex-fishermen have new employment</b>	<b>Laws to reduce no of boats/power and licenses, combined with policies to encourage other livelihoods . Subsidies for alternative livelihoods and boat buyback</b>	<b>Boat buy-back has already been initiated as has control of new boat building</b>	<b>Creation of alternative livelihoods has already been initiated</b>	<b>Laws to reduce no of boats/power and licenses, combined with policies to encourage other livelihoods have already been initiated. Subsidies for alternative livelihoods and boat buyback</b>	<b>Boat buy-back and control of new boat building until fishing effort is reduced to the required level</b>	<b>Creation of alternative livelihoods</b>	<b>Continued strengthening of the laws to reduce no of boats/power and licenses, combined with policies to encourage other livelihoods . Subsidies for alternative livelihoods and boat buyback</b>		
		Stop fishing in certain areas/seasons	Identification of closed areas/seasons according to scientific knowledge of fish spp. <b>Comprehensive monitoring of illegal fishing activities</b>	Increase in general public awareness of closed seasons and fishermen's awareness of regulations and future benefits. Capacity building for enforcement. <b>Develop</b>	Improvement of regulations. Stop illegal fishing.	Some closed areas during spawning season for selected spp. In China - summer fishing ban. Insufficient knowledge	<b>Mechanism for Increasing awareness of regulations.</b>	Conservation acts to protect fish stocks.	<b>More science based closure of areas and seasons. Summer fishing ban to be continued in China. Limitation of trawling to certain</b>	<b>Increased awareness of regulations</b>	<b>Conservation acts to protect fish stocks</b>		

			<b>plan for monitoring illegal fishing</b>					<b>areas. Comprehensive monitoring of illegal fishing)</b>				
	Incr in mesh size	Identification of optimal size at capture and reduction of by-catch	Increase in public awareness of regulations and future benefits. Capacity building for enforcement.	Improvement of regulations of size limits, monitoring and enforcement. Increase in funding for the enforcement. Stop Illegal fishing	Optimal size at capture is only known for some commercial species	Public awareness of regulations and future benefits is increasing	Some regulation in place but need to improve enforcement.	Improved selectivity of fishing gears.	Increase in Public awareness of regulations and future benefits	Improvement of regulations. Regulations and enforcement to stop Illegal fishing		
	Improve ment in Stock management	Use of precautionary approach and ITQ & EBFM based on improved monitoring. Establishment of database and joint stock analysis/ assessment	Coordination between scientists, managers, fishermen, gov depts and regionally. Establish regional organisation.	Self-regulation system by fishermen themselves and community-based management in the coastal areas. Widen the no of species for which landings data is recorded	ROK - TAC for limited number of spp. China-Negative growth in landings and summer fishing ban.	Need to improve coordination between scientists, managers, fishermen, gov depts and regionally → <b>Move to legislative</b>	<b>[Some discussion in China for the introduction of community-based fishing regulation. -&gt; needs to be deleted] Widespread in ROK for self-regulation system by fishermen. [No</b>	Introduction of ITQ & EBFM based on improved monitoring and assessment.	Improved coordination between scientists, managers, fishermen, gov depts and regionally	Self-regulation system by fishermen themselves and community-based management in the coastal areas. <b>[Establish regional organisation.-&gt; move to institutional]</b>		



				with independent checks			<b>regional organisation -&gt; move to Institutional I?]. → OK</b>			<b>Improvement in funding [delete] → OK</b>		
Rebuilding of depleted fish stocks to normal levels	Rebuilding Stocks	Release of juveniles. Habitat improvement (artificial reef)	Coordination between scientists, managers, fishermen, gov depts and regionally	Improvement of policy and funding for the release of <b>juveniles</b> and habitat improvement. Self-regulation system by fishermen themselves and community-based management in the coastal areas.	In China massive release of juveniles of many species but some need for evaluation of effects. In ROK some species released. Habitat improvement many artificial reefs deployed	Limited coordination between scientists, managers, fishermen, gov depts and regionally	<b>Limited environmental input into the policy of stock enhancement and habitat improvement.</b> Improvement of policy and funding for the release of <b>juveniles</b> and habitat improvement. Self-regulation system by fishermen themselves and community-based management in the coastal areas ( <b>in ROK only</b> ).	Controlled release of juveniles based on sound scientific knowledge, <b>with increase awareness of the genetic impacts.</b> Habitat improvement to be continued through artificial reef.	Better coordination between scientists, managers, fishermen, gov depts and regionally	Improvement of policy and funding for the juvenile release and habitat improvement <b>that take into account the environmental impacts.</b> Self-regulation system by fishermen themselves and community-based management in the coastal areas.		

Sustainable/Polyculture/optimization of the distribution and the cultured spp Improve ment culture techniques.	Develop Environmental-friendly mariculture models and technology	Increase implementation of Integrated Multi-trophic Aquaculture (IMTA)	Increase in Public awareness of the benefits of IMTA <b>[set up a mechanism for public awareness??]</b>	Use the licenses for the control of farm area and species cultured <b>(based on carrying capacity models) [note: using the licenses ... will be sufficient for an ideal legislative action?]</b> (licenses is the most ideal tools at this time, Jang)	Integrated Multi-trophic Aquaculture (IMTA) is implemented in some areas in China	<b>Limited public awareness of the benefits of IMTA [maybe deleted, sounds not an institutional action] (I don't agree)</b>	<b>Need to introduce licenses for IMTA practice [is this on-going matter????] (YES) (Ongoing in open sea and land based cultures in Korea-Jang)</b>	Integrated Multi-trophic Aquaculture (IMTA) is implemented as the major technology. Increase the economic benefit from IMTA <b>(combined with Carrying capacity MODELS) (I agree, Jang)</b>	Training and capacity building	<b>Increase the percentage of licenses issued for IMTA in relation to monoculture [sounds like a Technical](maybe rephrase - change of policy so that government can stipulate the species composition and area occupied)</b>		
		Move the mariculture from inshore to offshore and innovating the new technologies	<b>[mechanism to ]</b> Increase in Public awareness of the benefits of offshore aquaculture. Coordination between different ministries, local government and private sectors	Legislating the reasonable and acceptable regulations for encouraging the offshore mariculture	<b>Need to develop (There are some) suitable innovative offshore aquaculture technologies (adapted) to different conditions[ note: sounds not on-going] (yes, it is</b>	<b>Increase (Limited number of ) demonstration sites in commercial scale [note: not sounds on-going](Yes)</b>	<b>Legislating the reasonable and acceptable regulations for encouraging the offshore mariculture [note: not sounds on-going] (limited legislation and regulations</b>	<b>Standard offshore technologies to different conditions are well developed [is this a feasible action to be proposed????] (YES)</b>	<b>BAP (Best Aquaculture Practice) demonstration in commercial scale [move to Technical?]</b>	Standards system and regulations for offshore mariculture are well established		

					on-going in Korea)		for encouraging sustainable offshore mariculture)(Yes)					
	Reduce nutrient discharge	Roll out of limited water exchange aquaculture land based systems including recirculating systems. Improvement of artificial diet	<b>[Increase: delete] [mechanism for] public awareness of the benefits of artificial feeds.</b>	Laws to regulate nutrients discharge and Policies to discourage use of trash fish	<b>(There is substantial development in)Limited water exchange aquaculture systems, recirculating systems and improvement of artificial diet (. However limited water exchange systems and recirculation systems are only used by very limited numbers farmers.)is being implemented [note: didn't understand</b>	<b>Increase demonstration sites in commercial scale note: not sounds on-going] (No sites to demonstrate the benefits of these systems)(Government compensating expense for buying some artificial diet in Korea)</b>	Preparing laws or regulation to control nutrients discharge and policies to discourage use of trash fish (in which country)(not in both countries )	<b>(The rollout of...)Limited water exchange aquaculture systems and improvement of artificial diet is practiced in commercial scale [note: didn't understand]</b>	<b>BAP (Best Aquaculture Practice) demonstration in commercial scale [move to Technical?]</b>	Improved laws or regulations to control nutrients discharge and Policies to discourage use of trash fish		



		Effective diseases Control	Develop the diseases diagnosis and control techniques. Establish the network for diseases monitoring system	[add improve?] Coordination between central government, scientists and farmers. Establishing the pre-warning system of diseases	Regulation of notifiable diseases, and quarantine procedures. Regulations for preventing infectious disease transmission	Diagnosis and control techniques for some diseases developed. The network for diseases monitoring system established	Coordination between central government, scientists and farmers is established. Pre-warning system of diseases needs [to be improved note: sounds not like on-going]	<b>More strict regulation of notifiable diseases, and quarantine procedures is needed. Regulations for preventing infectious disease transmission is needed [note: sounds not on-going]</b>	Diagnosis and control techniques for all diseases is established. The network for diseases monitoring system is well operated	Coordination between central government, scientists and farmers is intensified. Pre-warning system of diseases should be operated all time	Application of stricter regulation for controlling diseases.		
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## **Annex II - Agreed Guidelines for Demonstration Project and Site Selection**

- **Timing of Demonstration Activities**

Start September 2008 to December 2009 (May be able to start earlier)

- **Selection Criteria for Demonstration Projects and Sites**

1. Selection of management actions to demonstrate (criteria are listed in order of importance; actions should satisfy at least some criteria)

- Effectiveness – easily obtainable results
- Ease of which the action can be demonstrated and results easily understood by general public (ease of dissemination)
- Results that help raise public awareness
- Combination of technical and institutional actions should both be demonstrated
- Cross component action
- Transboundary nature of actions
- Opportunity to cooperate with other projects/organizations
- Co-financing

2. Site selection

- Appropriateness of site to demonstrate management actions
- Political willingness
- Stakeholder willingness to participate
- Replicability in other areas around the region

- **Procedure**

1. Proposal – to be submitted to the RWG
2. 2007 RWG - will propose candidate actions and sites considering the criteria above. Justification should be provided.
3. RSTP – will review and make recommendations
4. PSC - will decide.
5. PMO – will draw up contracts in consultation with NPCs





**Annex III: 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

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\* 1 is highest priority