State of the YSLME after 10 years of implementation of the YSLME Strategic Action Programme

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What affects the state of the ecosystem?

- Over-fishing depletes population of desirable species and alters ecosystem structure.
- Destruction of coastal habitats removes nurseries for marine organisms and refuges for migratory species.
- Nutrient enrichment can de-stabilize primary producers.
- Marine pollution can damage all trophic levels.
Strategic Action Programme (SAP) ecosystem service approach

Provisioning Services
- fisheries and mariculture management

Regulating Services
- pollution monitoring and control

Cultural Services
- reduction in marine litter and contaminants

Supporting Services
- ecosystem and biodiversity protection and conservation

11 management targets implemented by 33 management actions

Protecting ecosystem services assures sustainably functioning ecosystems and enables sustainable livelihoods for humans.
Placing limits on commercial fisheries

- Vessel buy-back program
- Limits on locations and seasons for fishing
- Limits on equipment
- Enhance fish stocks

Body length distribution of small yellow croaker in YS.
Promoting sustainable mariculture

- Promote Integrated Multi-Trophic Aquaculture (IMTA)
- Reduce nutrient discharge
- Control diseases

Changes in organic matter and sediment oxygen demand after installation of IMTA facilities.
Managing Pollution

- Improved monitoring programmes
- Point and non-point source control
- Marine litter control
- Implementation of international conventions

Recent trends in COD in the coastal waters of RO Korea.

Areas of worse than Grade IV seawater quality (summer), PR China.
Managing Pollution

Improved monitoring programmes

Water and sediment monitoring stations managed by PR China.

Marine Environment Information System managed by RO Korea.
Managing Pollution

- Point and non-point source control
- Marine litter control

Types of marine litter. Left: floating, Right: beach

Eco-friendly buoys.
Understanding Ecosystem Changes

- Nutrient ratio changes
- Nuisance and harmful aquatic species
- Climate change

Nutrient ratios, West Sea, RO Korea.

HAB survey stations and data, West Sea, RO Korea.
Understanding Ecosystem Changes

Climate change Modeling to predict anchovy distributions.

Sea-surface temperature anomaly for the Bohai and Yellow Seas.
Understanding Ecosystem Changes

Climate change

Sea-surface temperature changes. The $18^\circ$ isothermal line for 1980 and 2010 are shown.
Protecting Biodiversity

- Coastal wetlands and reclamation
- Marine protected areas
- Priority threatened and endangered species
- Invasive alien species

Wetlands, mudflats, and other critical coastal environments are better protected through Integrated Coastal Management interventions.

A Spoon-billed Sandpiper, Lime05, banded in Chukotka, Russia, was recorded at Rudong, PR China.
Protecting Biodiversity

- Coastal wetlands and reclamation
- Marine protected areas
- Priority threatened and endangered species
- Invasive alien species

Areas of MPAs in PR China.

Areas of MPAs in RO Korea.

Real-time video of spotted seal on Baengneyong Island.
Protecting Biodiversity

- Coastal wetlands and reclamation
- Marine protected areas
- Priority threatened and endangered species
- Invasive alien species

Candidate sites for ballast water exchange.

Area of *Spartina alterniflora* in Yancheng, Jiangsu.
The state of the YSLME

Some of the highest-impact achievements in the past ten years:

• Reduced fishing pressure and better management of commercial fisheries.
• Promising technologies for sustainable mariculture and aquaculture.
• More comprehensive monitoring programmes and bilateral coordination.
• Nutrient control practices are being put into place to control eutrophication.
• Protection of coastal ecosystems can lead to better protection of threatened and endangered species and nursery habitats.
• Control measures for invasive species are being implemented.
• Impacts of climate change are being evaluated.
Protecting ecosystem services assures sustainably functioning ecosystems and enables sustainable livelihoods.