



Approach to the synthesis of the environmental services of the SCS

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Eight priority services provided by the SCS



- 1) Fisheries (both marine and aquaculture)
- 2) Waste disposal
- 3) Land reclamation and land use conversions
- 4) Tourism and recreation
- 5) Natural disaster protection
- 6) Transportation, and
- 7) Oil and mineral exploration
- 8) **Transboundary issues**

Matrix: country x priority services

Country/Service	1	2	3	4	5	6	7	8
China	X	X	X	X	X	X	X	X
Vietnam	X	X		X	X	X	X	X
Cambodia	X	X		X		X	X	X
Thailand	X	X	X	X	X	X	X	X
Malaysia	X	X	X	X	X	X	X	X
Singapore	X	X	X	X	X	X		X
Indonesia	X	X	X	X	X	X	X	X
Brunei	X	X		X			X	X
Philippines	X	X	X	X	X	X	X	X



**Map showing
South China Sea
and partial
littoral states**

Tasks

- Analyze and synthesize the trends of the **eight** priority services
- Analyze the drivers of environmental trends and services
- Assess the extent to which **historical** conflicting territorial claims of maritime countries have affected use and management of maritime and coastal resources and environmental trends
- Analyze the interactions, trade-offs and synergies across the eight priority services and risks that current trends pose in the short and medium term
- Identify topics for further research of high gain low cost for the purposes of this evaluation



(1) Fisheries

- Trends of fish catch and production trends, including trends of catch per unit of effort and productivity of aquaculture operations.
- Possible sources of information are FAO and SEAFDEC
- Questions:
 - national, provincial levels?
 - type of fisheries?
 - fishing grounds: national or extra-national?
 - technological change?
 - Capture fishery and aquaculture: 2 separate things



(2) Waste disposal

- Sewage, industrial and mining effluent, solid waste (cities, fishing ground, tourist/recreation...)
- Infrastructure – sewage treatment plants
- Management practices including pricing
- Laws and regulations/ enforcement
- Any coastal zone planning?
- Incidence of marine pollution: algal bloom, health hazard, fish kills



(3) Land reclamation & conversion



- National, provincial policies and programs
- List of reclamation schemes – each country
- Land conversion to fish farms, urban and commercial use
- Loss of coastal habitats
- Public protests
- Problem of siltation and loss of visibility
- Remedial action: Direct remediation, EIAs, public consultation
- Sources of information?

(4) Tourism & recreation



- **Survey of coastal tourism & recreation**
 - established and new resorts, marine reserves, marinas
 - description of types
 - data – tourist arrivals, length of stay
 - case studies of coastal resorts
- **Infrastructure and management**
 - planning and use requirements, permits, charges
 - cruise facilities n marinas
- **Government promotion and support**
- **Sources: government/ commercial**

(5) Natural disaster protection



- **Survey of natural disasters**
 - typhoons and tropical storms
 - earthquakes and tsunamis
 - flooding and mudslides
- **Data: record of incidents**
 - date/location/damage/loss of lives
- **Analysis of causes**
- **Remedial action**
 - action plans and protective measures
 - government agencies involved
 - Private sector / foreign contributions
- **Impact on tourism/fisheries, etc**

(6) Marine transport



- **Review of marine transport**
 - ship owning
 - major ports
 - shipping and cargo handled: trends
 - seafarers: employment
- **Navigation**
 - shipping routes: oil tankers separately
 - designated navigation channels
 - navigation protection – system of lighthouses, buoys...
- **Shipping accidents and pollution**
 - incidents of collisions, groundings, sinkings
 - incidents of oil pollution
 - risk in transport of exotic species
- **Causes: weather, heavy traffic, human error**
- **Conflict with other marine sectors**

(7) Oil and mineral exploration



- **Review of oil and gas sector**
 - offshore oil fields and exploration
 - production trends (oil and gas)
 - domestic consumption and trade
 - pipelines for oil and gas
- **Mining of coastal and offshore minerals**
 - sand, offshore tin
 - mining effluents
- **Hazards**
 - blowouts and rupture of pipelines
 - shipping disasters (see section on marine transport)
 - toxic effluents from mining activities
 - remedial action: warning systems, oil-spill contingency plans

Transboundary issues



- **Basic data**
 - land area, length of coast
 - whether signatory of UNCLOS
 - variation of claims on territorial water limits
- **Problem of overlapping claims**
 - number of cases in SCS
 - whether overlapping areas have resources
 - cases settled/ under arbitration
- **Disputed islands**
 - Parcels and Spratleys
 - Other disputed islands
 - Cases settled/ under arbitration
- **Successful cases**
 - Joint exploration and development of resources
 - Conservation
- **Indicators easily understood by non-specialists!!**