



# **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**





**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!!**