

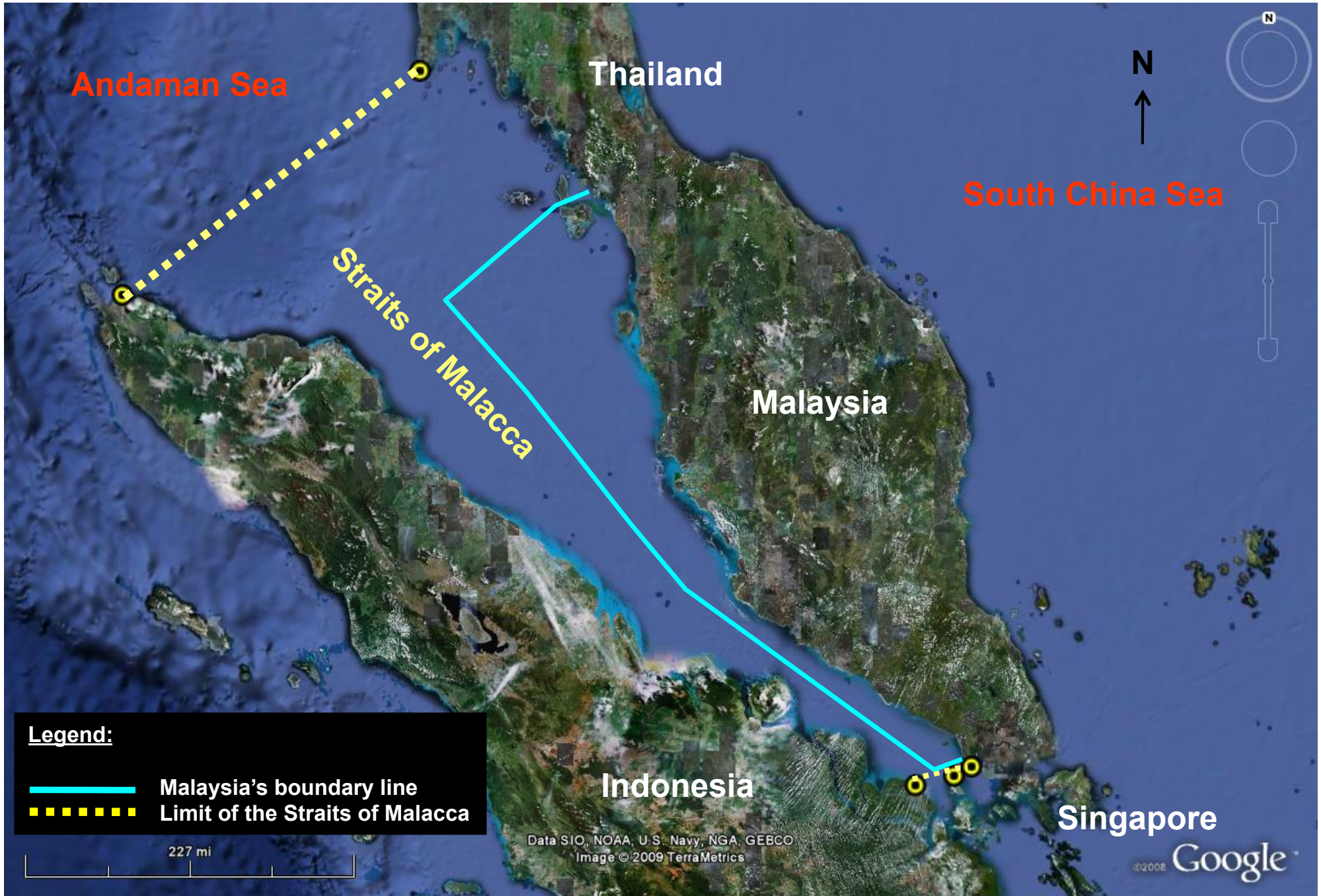
Impacts of Climate Change on the Straits of Malacca: The “Three Major Effects” and Their Policy Remedies

Syed Mohazri Syed Hazari
Centre for the Straits of Malacca
Maritime Institute of Malaysia (MIMA)

Aim of Presentation

- To provide **non-technical** overview of climate change issues on the Straits of Malacca, related to **adaptation**
 - focuses on adaptation policy options, which can be adopted by Malaysia to respond to the “three major effects” of climate change on the Straits of Malacca

Straits of Malacca (SOM)



Environmental Sensitive Areas (ESA) in SOM

- Fringing coral reef
- Mangrove
- Seagrass beds
- Fisheries
- Coastal and marine protected areas



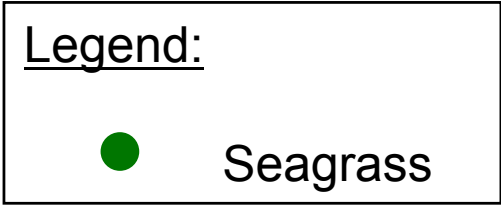
Distribution of Mangrove and Coral Reef Areas

Legend:

- Mangrove
- Coral reef



Distribution of Seagrass Beds





Commercial Fishing Ports and Fishery Infrastructure

Legend:

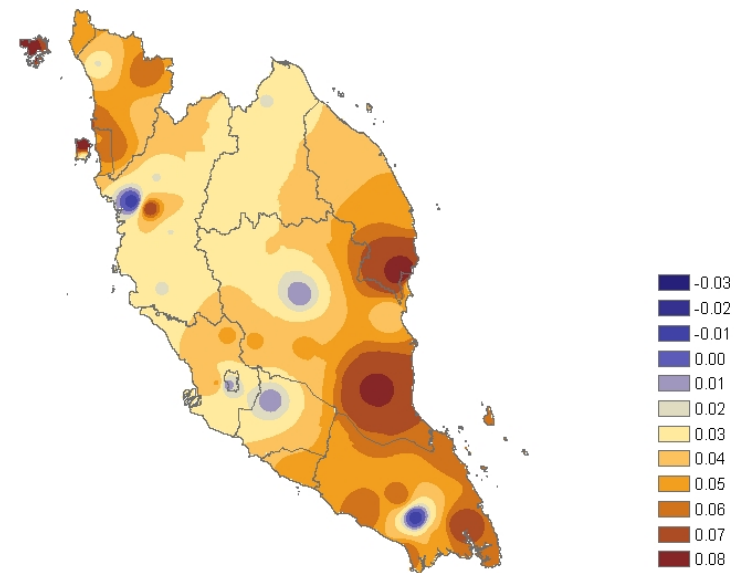
- Fishing ports
- ▲ Fishing & cold storage facilities
- Seafood canneries

Coastal Problems in SOM

- Pollution
 - Land based: TSS, *E. coli*, heavy metals, oil and grease (O&G)
 - Marine based: O&G, tarballs, butyltin compounds
- Coastal Erosion:
 - 1300 km of Malaysia's shoreline are affected
 - Shoreline retreat: 1 m/yr to 100 m /yr (Coastal Erosion Study, 1985)
 - 50% along the West Coast of Peninsular Malaysia
 - 37 areas as Category 1 (Critical Erosion)

Global Warming

- Peninsular Malaysia:
 - 1967 – 2007: 0.08 °C/10 yrs (max. increase)
 - Projection:
 - Rise in the range of 0.6 to 4.5°C when the concentrations of atm. GHG double



Source: Malaysian Meteorological Department (2009)

Increase in Seawater Temperature

- Increase in global temperature – increase in seawater temperature
- FAR of IPCC (2007):
 - Ocean temperatures will increase by 0.10°C per decade

Rise in Sea Level

- Relative sea level change in Malaysia (DID, 2007):

Northern area of SOM (Langkawi)

Teluk Ewa		Kuah	
Tidal data from 1986 – 2006		Tidal data from 1996 – 2006	
Change in mean sea level (cm)	Rate of change in mean sea level (cm/yr)	Change in mean sea level (cm)	Rate of change in mean sea level (cm/yr)
2.0	0.1	-0.02	-0.002

Southern area of SOM

Tg. Pelepas Port		Kukup	
Tidal data from 1996 – 2006		Tidal data from 1986 – 2006	
Change in mean sea level (cm)	Rate of change in mean sea level (cm/yr)	Change in mean sea level (cm)	Rate of change in mean sea level (cm/yr)
0.18	0.018	2.5	0.125

Coastline of Kedah

Vulnerable Areas in the SOM

Coastline of West Coast of Peninsular Malaysia

Matang Mangrove Forest Reserve

Fringing Reef

West Coastline of Johor

Pulau Kukup RAMSAR Site
Tg. Piai RAMSAR Site

Malaysia's Readiness for Adaptation in SOM

- Regulatory:
 - No single framework
 - Legislations and policies – marine and coastal areas: sector based
 - However, several provisions within current framework - can be interpreted as elements to respond to CC
 - Ambiguous in nature but sufficient to address issues on climate change
- Management:
 - National focal point:
 - Conservation and Environmental Management Division of Ministry of Natural Resources and Environment (NRE)
 - Malaysia's 2nd National Communication to UNFCCC
 - Adaptation (priority area)
 - Headed by the National Hydraulics Research Institute of Malaysia (NAHRIM)

Recommendations

- Implement the ‘precautionary principle’ and polluter pays principles’ in developing national strategies/policies on adaptation to climate change
- Utilize the ‘clearing house mechanism’ to disseminate information on climate change
- Carry out cost and benefit analysis (CBA) to determine suitable national response
 - Anticipatory vs. Reactive

Recommendations (cont'd)

- Integration on adaptation in developing development policies, especially those related to coastal areas
- Develop a national climate change policy framework, focusing on adaptation
- Carry out vulnerability assessment on coastal areas using the DPSIR framework
- Increase capacity building (i.e. expertise in modelling)

Recommendations (cont'd)

- Close cooperation between science and policy
- Carry out national institutional assessment to determine gaps
- Develop more protected area network within the coastal and marine areas
- Develop guidelines on adaptation measures in coastal and marine areas for specific areas

Recommendations (cont'd)

- Adopt the 'no regret' strategy to adapt to climate change for vulnerable areas
- Develop a Climate Change Action Plan for the Straits of Malacca (CCAP-SOM)

Conclusion

- SOM – vulnerable to impacts of climate change, especially to the rise sea level
- National regulatory and management arrangement – although ambiguous, it is ready for adaptation

Thank You

Terima Kasih