ROLE OF MARINE TURTLE CONSERVATION AND CC ADAPTATION IN …

Coastal Zone Land Use Planning

Marine Turtles in the Guianas

- Dermochelys coriacea
- Chelonia mydas
- Lepidochelys coriacea

Threats to Marine Turtles

- Illegal egg harvests
- Fisheries bycatch
- Coastal zone changes ?? Habitat losses??
- Increased vulnerability to predation?
- Reduction in hatching success?
- Changes in hatchling sex ratios?
- Reduction in food availability?

Ecosystem Relationships

- Galibi Nature Reserve: increasing interactions with jaguars
- Increasing community dependence on coastal fisheries: increasing utilization of migration and foraging habitats
- Growing ecotourism: more visitors on the beach. More interactions between nesters and humans?
- Narrowing beaches: nests closer to vegetation fringes: increased access by predators

Monitoring for Conservation

WWF has identified marine turtles as one group of animals that requires some level of human intervention to ensure survival. Therefore WWF invests time, money and human resources to protect the marine turtles.

Coasts and their Vulnerabilites to Weather

Aerial Survey 2010

Part of the N-E Coastline of Suriname

Marine Turtle Nesting Site

Suriname Beaches

Potential threat to beach stability

Sand banks may become completely inundated during the periods of December – February and then late May (rainy season).

How vulnerable are coastal dwellings?

Tourist Lodge, Galibi Nature Reserve

Galibi Villages

Vulnerability of Coastal Communities to CC

Community of Bramspunt at the mouth of the Suriname River and open ocean

Galibi Nature Reserve. Currently high tide reaches up to the vegetative line, inundating all turtle nests.

Adaptations for Conservation of Marine Turtles

- Monitor beach conditions and changes as a result of CC
- Shift threatened nests
- Educate and raise awareness with local communities
- Increase capacity of populations to tolerate increased pressures
- Replant vegetation to increase shading on the beach
- Build hatcheries to increase nest success and recruitment
- Increase capacity for beaches to shift backward when high tide line moves inland

What are we currently doing?

- Measuring beach profiles
- Monitoring surface sand and water temperatures
- We want to monitor nest temperatures
- Document coastal economic activities associated with marine turtles and their habitat and develop models to predict social and economic impacts if weather conditions change significantly
- Determine how conservation of coastal species such as marine turtles may reduce adverse impacts of CC

Monitoring marine turtle nesting activities and adapting to CC.

MSC Students conducting beach profiles, Matapica, SURINAME

How vulnerable is Suriname's coast? Matapica 2010

Front view

Overhead

Small bridge across the canal May 2010

Matapica after heavy waves: Oct. 2010

Buried trees after heavy waves dump over 2 metres of sand on the beach

The bridge no longer spans over a creek

…and after one stormy night

March 2011

Important Economic Activities along Suriname's Coasts

- Artisanal and commercial drifting gill net fisheries
- Small scale agriculture
- Eco-tourism
- Marine turtle egg exploitation
- Transportation of visitors to and from the village and to marine turtle nesting sites.
- Guest house management for tourists but other visitors as well.

Potential CC Impacts

Increased temperatures

- Agriculture affected. Temperatures too high for proper crop formation. Soil micro-organisms affected.
- Beach too hot to truly attract tourists
- Sand too hot - fewer turtles nesting – tourism potential of site declines
- Water availability reduced.
- Fish stock composition changes, especially in swamp areas.

Potential CC Impacts

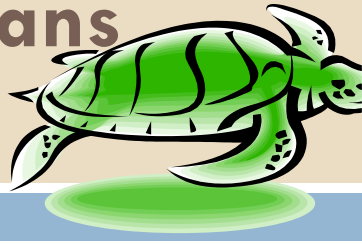
Increasing sea levels

- Agricultural lots become inundated or experience increases in salinity – may no longer be suitable for agriculture
- Houses flood. Persons forced to move. School and church that are currently close to the water's edge, face threat of structural damage.
- Travel to Albina (closest town) for secondary school education may become more hazardous due to rougher seas.

Linking CC for MT with Coastal Management

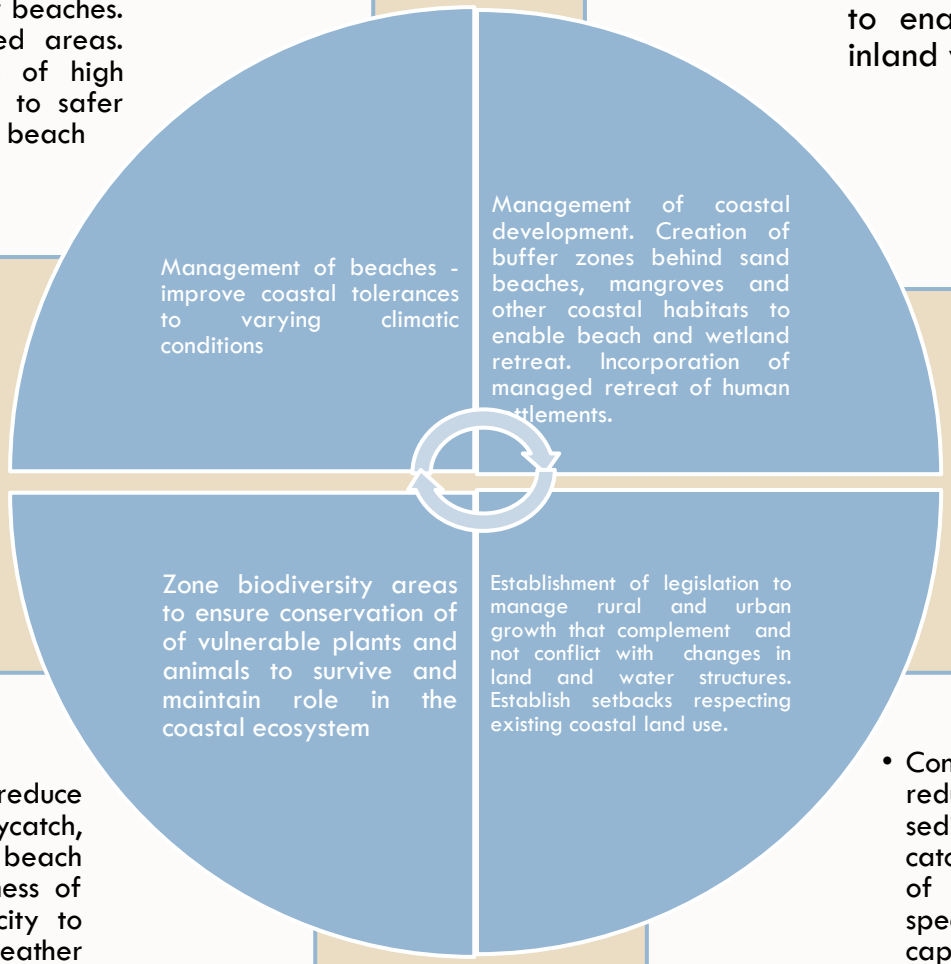
- 1) Integrate management of coastal and marine resources
- 2) Establish and enforce setback regulations
- 3) Incorporate climate change into land-use planning
- 4) Prevent removal of native vegetation and replant where it has already been removed
- 5) Ensure that new and current coastal development is 'turtle-friendly'
- 6) Monitor sand/nest temperatures and record nesting areas, nest success, hatchling sex ratios (through histological examination of dead hatchlings)
- 7) Measure beach profiles and beach dynamics for modeling future impacts of sea-level rise/
- storm surge
- 8) Identify nesting areas that may be used in the future
- 9) Control land-based activity to reduce pollution and sedimentation
- 10) Identify and prioritize protection of key foraging sites/ refugia/areas of high coral/ sponge cover by ensuring their coverage in a network of protected areas

Development of sound CZM plans makes good turtle sense



- Monitor sand temperatures, establish baselines and protect cooler beaches. Help re-vegetate deforested areas. Relocate nests from areas of high erosion and inundation risk to safer locations further back on the beach

- Establish / increase setbacks to enable beaches to move inland when necessary.



- Marine turtle conservation (reduce poaching, fisheries bycatch, relocation of nests, stop beach erosion) to increase robustness of populations. Species' capacity to deal with extreme weather conditions increased.

- Control land-based activities to reduce marine pollution and sedimentation. Regulate catch/effort to control harvesting of resources that further increase species vulnerability and reduce capacity to sustain ecological services.

Summary of MT Adaptation measures that best support Sustainable Coastal Zone Management

- Land protection and management : halt placement of permanent structures in order to permit shifting land and water
- Direct species management to increase or sustain ecological and economic / social services
- Monitoring and planning for adaptive management
- Legislation and regulations to manage marine pollution and infrastructure and industry development

Where is there alignment ?

Establishment of setbacks to facilitate shifting and growth of human populations

Improving robustness of beaches and wetlands, for species , tourism, coastal zone protection

Species Management and conservation

Monitoring ecosystem changes, planning interventions. and evaluation

Legislation to regulate pollution and infrastructure development

How do we get policy makers and coastal communities to support these initiatives?

- Make available information materials to raise awareness and inform the public and decision makers on CC.
- Explain the potential adverse impact on current social, economic and development needs of the country.
- Identify availability of funds for coastal protection and management
- Provide a list of all economic activities that will benefit from conservation interventions
- Demonstrate how MT CC adaptations may help safeguard some economic activities of local communities
- Show alignment with MEAs such as CD, RAMSAR; but also national, regional and international development initiatives.