

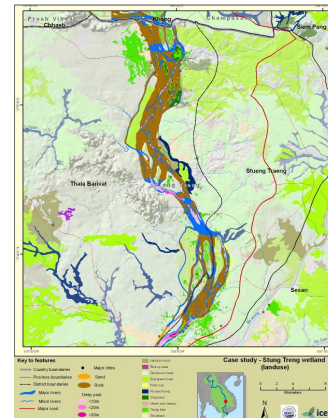
Cambodia Stung Treng Wetland Case Study

Presentation on wetlands adaptation options

3rd Regional Workshop 2-3 Feb 2012
Sunway Hotel, Phnom Penh

Site overview (1)

- Ramsar site designated 1999
- Area: 14,600 ha, on 37 km stretch of Mekong River;
- 2 main sections: a single wide channel, and large islands & narrow braided channels;
- Much of the braided channels are shallow and exposed;
- Dry season flow 3,513m³/s, an average depth of 2.5m;
- Wet season flow 21,363m³/s, with depth about 10m;
- About 13,000 people living in 21 villages depending on agriculture and subsistence fishing.



Site overview (2)

- Aquatic habitats: turbulent, shallow rocky substrate, deep pools and depressions, with over 200 fish species identified;
- Sand bars and grasslands: Sand bars – non-stable, non-tolerant to flooding – with sand beach nesting for river Tern, Small Pratincole, River Lapwing and Red-wattled Lapwing;
- Bushland: *Phyllanthus jullienii*, *Tectadium edule*; mosaic: Acacia and Barringtonia;
- Channelwoodland: *Anogeissus rivularis*, *Acacia harmandiana*;



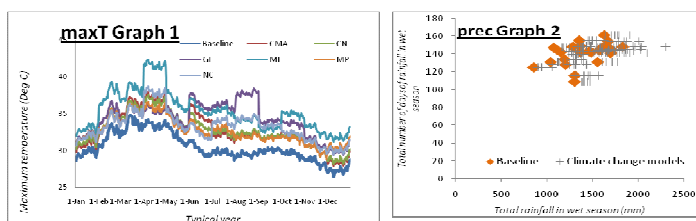
Current impacts

- About 10% of flooded forest die out;
- More frequent extreme flood and drought;
- Algal bloom in the dry season;
- Pest infestation on crops.



Potential climate change threats

- Mean annual T° likely increases by 0.6–1.05 °C;
- Increase 10% in the annual average rainfall, both in dry and wet seasons;
- 13% increase in dry season flows, 0.5m increase in water levels;
- 3% increase in wet season flow, 0.4m increase in water level;
- Peak flow may increase by 25%, or drop by 14%;



Potential impacts on key habitats and species (1)

Aquatic system

- Increased connectivity of the water system in the dry season,
- Less riffle and rapids due to higher dry season water level;
- Prolonged flooding of rocky substrate;
- Negative impacts on some fish species and birds incl. *Cirrhinus microlepis*, *Henicorhynchus spp.*, and Cormorant and Darter.

Deep pool

- Less fine grain, mostly replaced with boulder and large grains;
- Potentially positive in terms of water availability but may adversely affected from sedimentation change in deep pools;
- Many large (esp. white) fish species such as *Boesemania microlepis*, *Mystus wyckioides*, *Chitala ornata*, *Micronema apogon*, *Pangasianodon hypophthalmus*, *Cirrhinus microlepis*, *Probarbus jullieni*, *Catlocarpio siamensis*.

Potential impacts on key habitats and species (2)

Sandbars

- Decrease the total area of sandbars;
- Change in feature of the sandbars;
- River Tern, Great Thick-knee, Eurasian Thick-knee, Little Ringed Plover, Kentish Plover, Small Pratincole, River Lapwing and Red-wattled Lapwing

Potential impacts on key habitats and species (3)

Riverine flooded forests

- Gradual change of vegetation composition likely due to stronger flow, scouring and sediment transport;
- Accacia tends is vulnerable for its preference for less drier habitats;
- Positive effects on *Henicorhynchus spp* (Trey Riel).

Adaptation Options- maintenance and enhancement of ecosystem functions and resilience

Habitats

- Regeneration/restore degraded flooded forests;
- Re-vegetation of the riparian forest along the banks;
- Protection of existing flooded forests;

Species

- Protection of deep pools and corridors known for used by dolphin;
- Protection of Anlong Kambor pool for *Boesemania microlepis*
- Protection of flooded bushland targeting provision of habitats for *Henicorhynchus* spp;

Ecosystem services

- Development of dry season fish refuge in the associated flood plains;

Adaptation Options- engineering

Habitats

- Control of sand query within and in the immediate downstream of the wetland site;
- Delineation and demarcation of key habitats for protection incl. flooded forests, sandbars;

Adaptation Options- economic instruments

Habitat/Species/Ecosystem services

- Awareness raising in climate change and its impacts on wetlands;
- Raising awareness on and application of PES;

Adaptation Options- institutional innovation

Habitats/Species/Ecosystem services

- Strengthening of CFI management through their exclusive access right, empowerment;
- Strengthening of current research and awareness raising on impacts of CC on wetlands and adaption using current villager action research initiative;
- Establishment of national Ramsar committee;

Adaptation Options- policy innovation

Habitats/Species/Ecosystem services

- Reviewing of draft Ramsar site management plan to take CC into account and its endorsement;
- Integration of wetland management planning in the commune planning process;