WG2: Shoreline Evolution Over the Past Four Decades in Koh Kong, Cambodia

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CAMBODIA CLIMATE CHANGE ALLIANCE
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Introduction

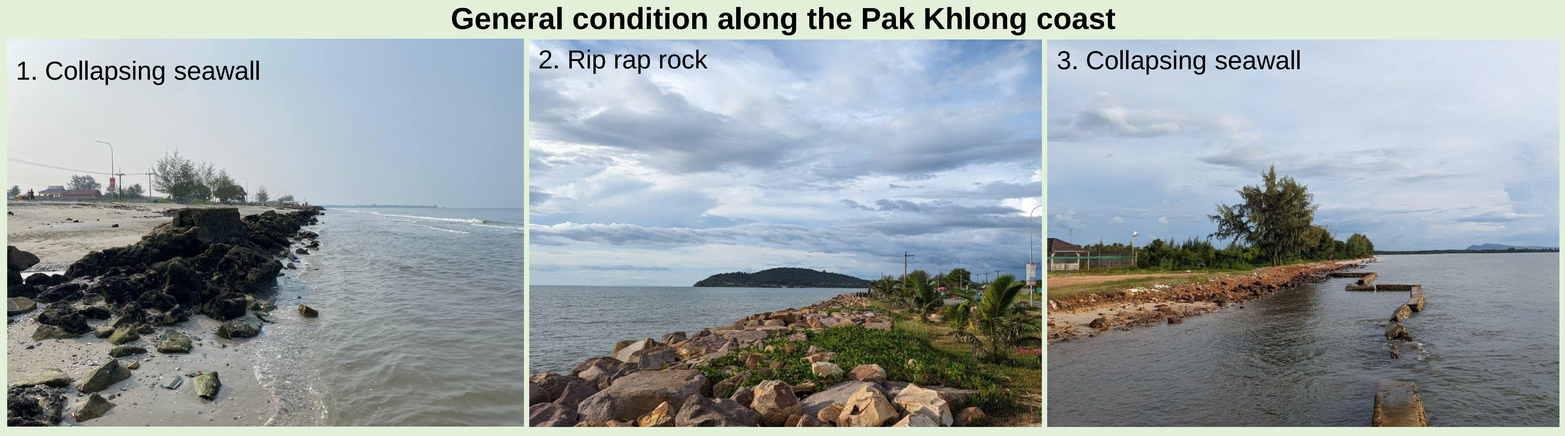
Climate change and anthropogenic pressure have caused a major concern for sustainable development and natural resources in coastal regions. Rising sea-level and storms are now majors factor accelerating shoreline recession around the world. Human activities such as groundwater and/or hydrocarbon extraction, damming, sand mining, water management, land use changes, coastal development, etc., have also caused flooding and shoreline retreat during the past half century. Therefore, reversal of land degradation has been addressed as part of the recent United Nations Sustainable Development Goals.

Cambodian coastal region is exposed to various natural and human-induced factors, including tides, waves, storm surge, land use changes, sand mining, and coastal development. Although the Cambodian coastal region has rapidly development during the last decade and being the second largest economic region after Phnom Penh Capital city, the physical coastal environment, especially the shoreline evolution this coastline, has not been well documented.

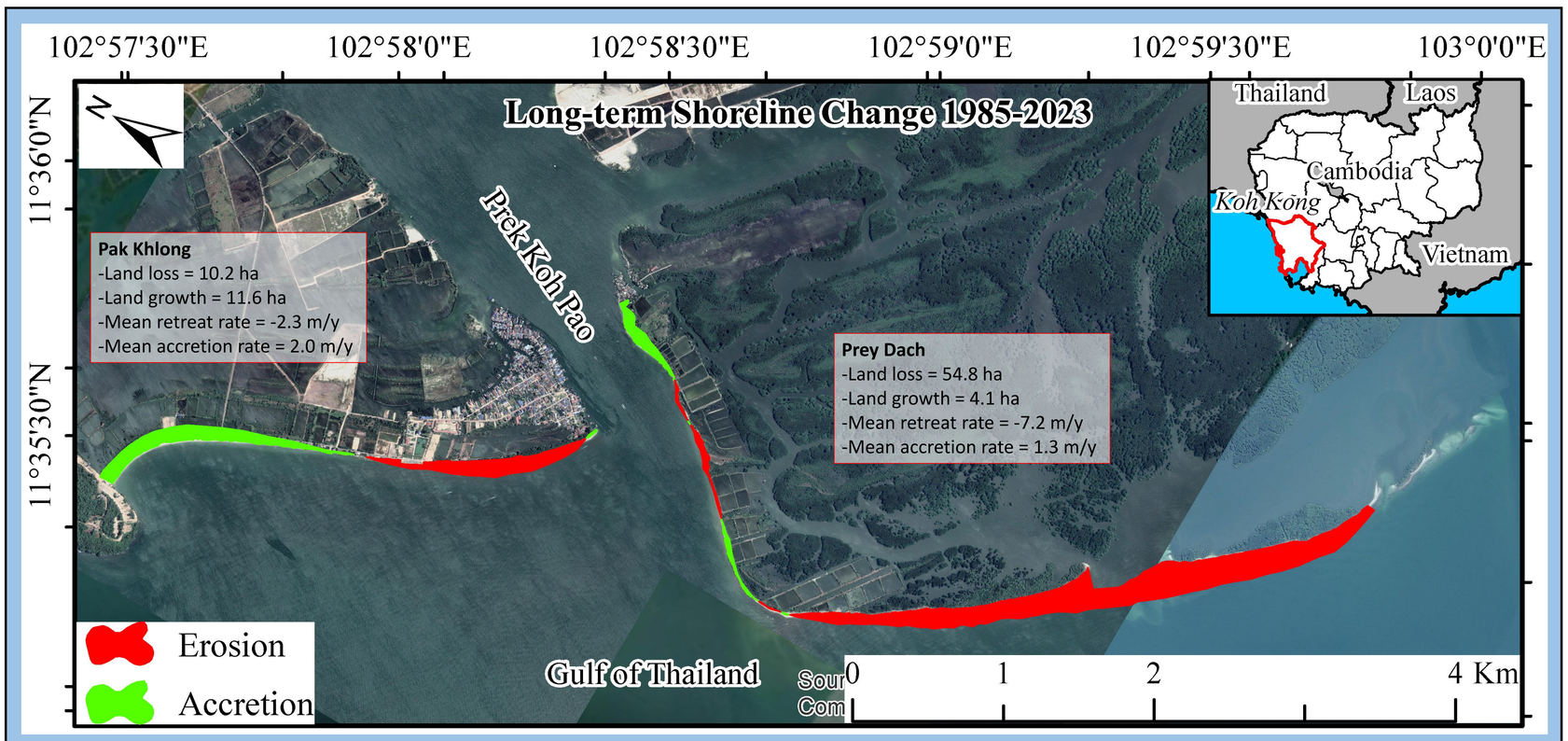
Objectives

- Investigate coastline evolution between 1985-2023 along the Pak Khlong and Prey Dach coasts in Koh Kong.
- Evaluate the factors influencing the shoreline evolution along these coastlines.

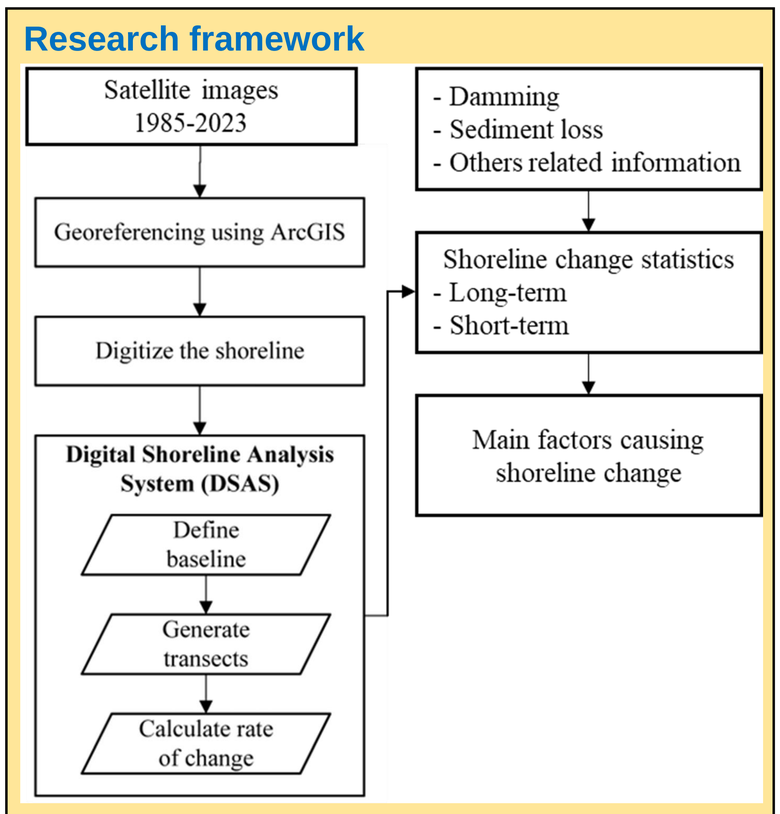
General condition along the Pak Khlong coast

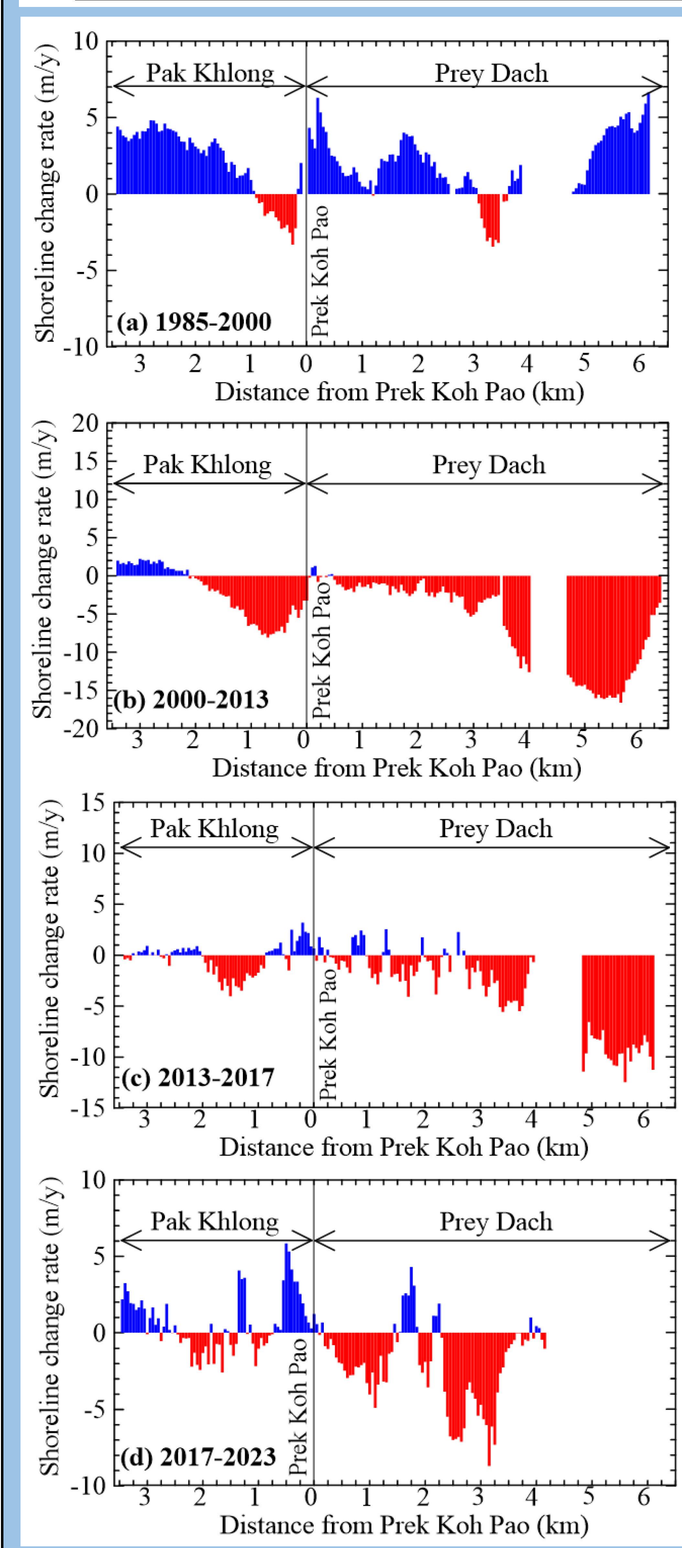


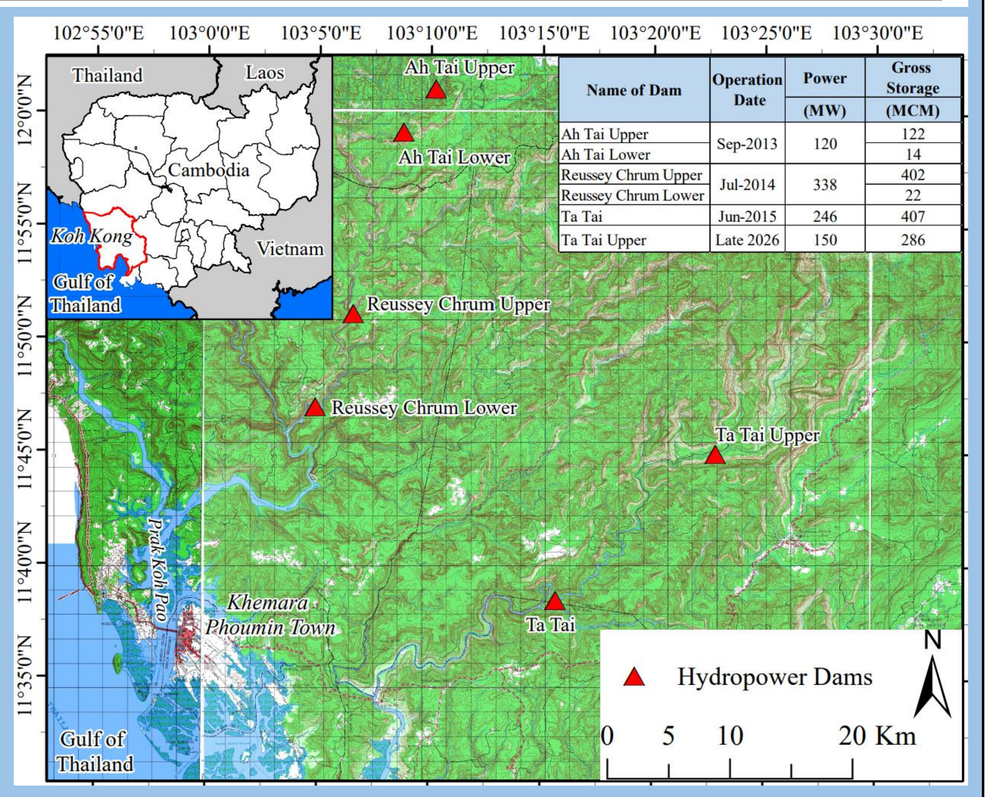
General condition along the Prey Dach coast



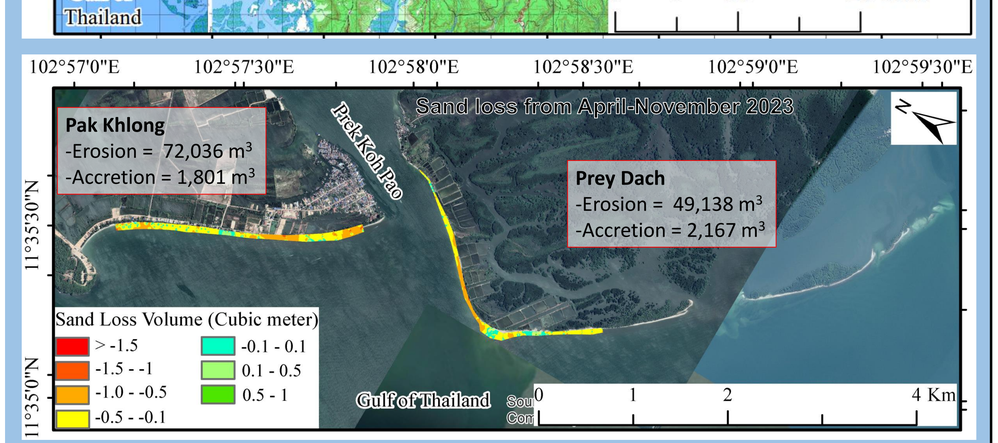
Research framework





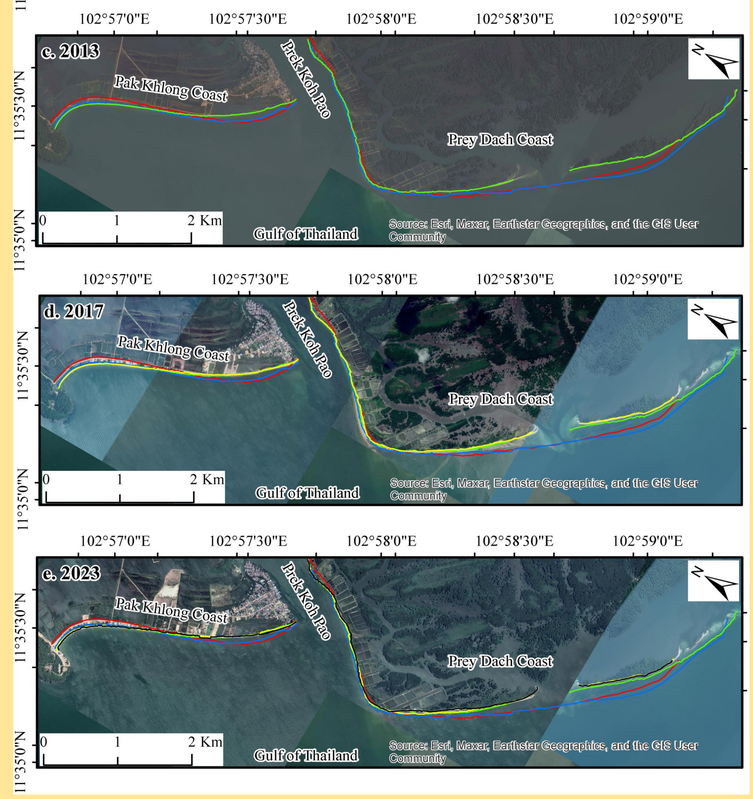


Name of Dam	Operation Date	Power (MW)	Gross Storage (MCM)
Ah Tai Upper	Sep-2013	120	122
Ah Tai Lower			14
Reussey Chrum Upper	Jul-2014	338	402
Reussey Chrum Lower			22
Ta Tai	Jun-2015	246	407
Ta Tai Upper	Late 2026	150	286



Shoreline extraction

All satellite images were georeferenced into Universal Transverse Mercator (UTM) projection Zone 48 with the World Geodetic System 1984 (WGS1984) and were rectified with the latest satellite image in 2023 to eliminate distortion.



Conclusions and recommendations

- Pak Khlong and Prey Dach coasts had a total land loss of 11.6 and 4.1 ha and growth of 10.2 and 54.8 ha over the past 38 years (1985-2023), respectively.
- Coastal processes (waves, tides, and currents) are a major cause of shoreline erosion along these two coastlines.
- Hydropower dams seem not to be a major cause of shoreline erosion.
- Sand mining should be considered in the future study because sand mining activities have occurred both in the river and coastal regions.
- A hydrodynamic model should be developed to fully understand the coastal processes and sediment transport in this region.