

# Hydrosedimentological and morphological Study of the Chaktomuk Area – Mekong River



**Financed by:** Japanese Government

**Client:** Mekong River Commission Secretariat (MRC)

**Date:** 2000 – 2002

**Budget:** € 80 000

**Location:** Phnom Penh, Cambodia, Chaktomuk area

**Partners:** DHI Software

## Assignment:

Mekong River Commission awarded the study contract of the river hydrosedimentology and morphology at the Chaktomuk junction in Phnom Penh. Based on the proper assignment of the actual morphodynamics in the river reach, different scenarios for a conceptual design of appropriate river training structures are formulated.

## Scope of Services:

- Evaluation of field survey data
- Screening of design criteria
- Preliminary design and cost estimate of river training
- Hydrosedimentological study
- Morphodynamic study
- River training works: conceptual design

## Technical Description:

MRC awarded a general modelling study on the complex morphodynamics of the Chaktomuk area. Based on the numerical simulations, a proper conceptual design of the river training works as a function of the river/riverbank morphology and the hydrosedimentological regime of the river was developed.



*Satellite image of the Chaktomuk Junction with the Mekong and Bassac River*

The Chaktomuk Junction is a particular dynamic river hydraulic system including the Mekong River, the Tonle Sap River (link with the Great Lake) and the Bassac River, as one of the most important and navigable river branch of the Mekong river delta.



*Tinh Bien Canal*



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Local river morphology shows a high level of dynamism: the Chrui Changwar Peninsula is known to have a significant accretion, in conjunction with lateral shifts (erosion) of the two adjacent Mekong River banks.

The seasonal hydrological/hydraulic variations (more than 10 m between dry and flood season), the flow reversals in the Tonle Sap and the high sediment loads cause this Chaktomuk Junction area to evolve quite rapidly and intensively. Therefore, a detailed numerical modelling of the area was set up. From a detailed calibrated hydrodynamic modelling of the actual situation, some morphological features are simulated in the numerical simulations.



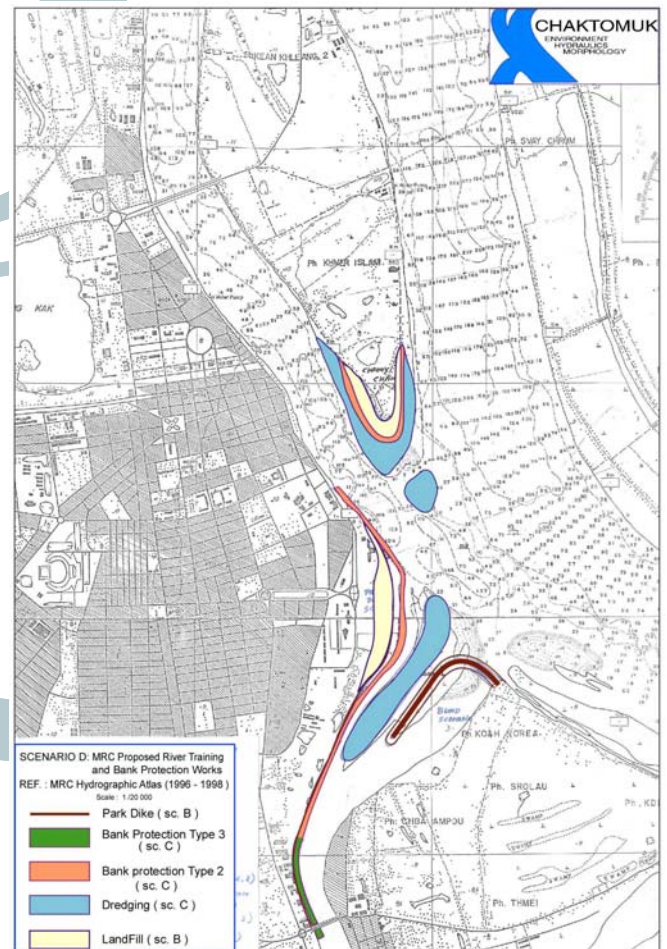
Bank protection works along the Tonle Sap Riverbank (Chaktomuk Junction)



Tonle Sap

The Bassac River entrance left riverbank is eroding progressively whilst the right bank knows severe sedimentation. Intensive field measurements were used to calibrate and validate the modelling.

Based on the actual situation and its modelling, proposed structures were tested via mathematical models. The proposed river training works included slope bank protection with concrete slabs and rock bunds to deviate the flow into the former Bassac entrance.



Selected river training work structure (rock bund) at the Bassac River entrance (Chaktomuk Junction)