

Living Rivers



Dying Rivers

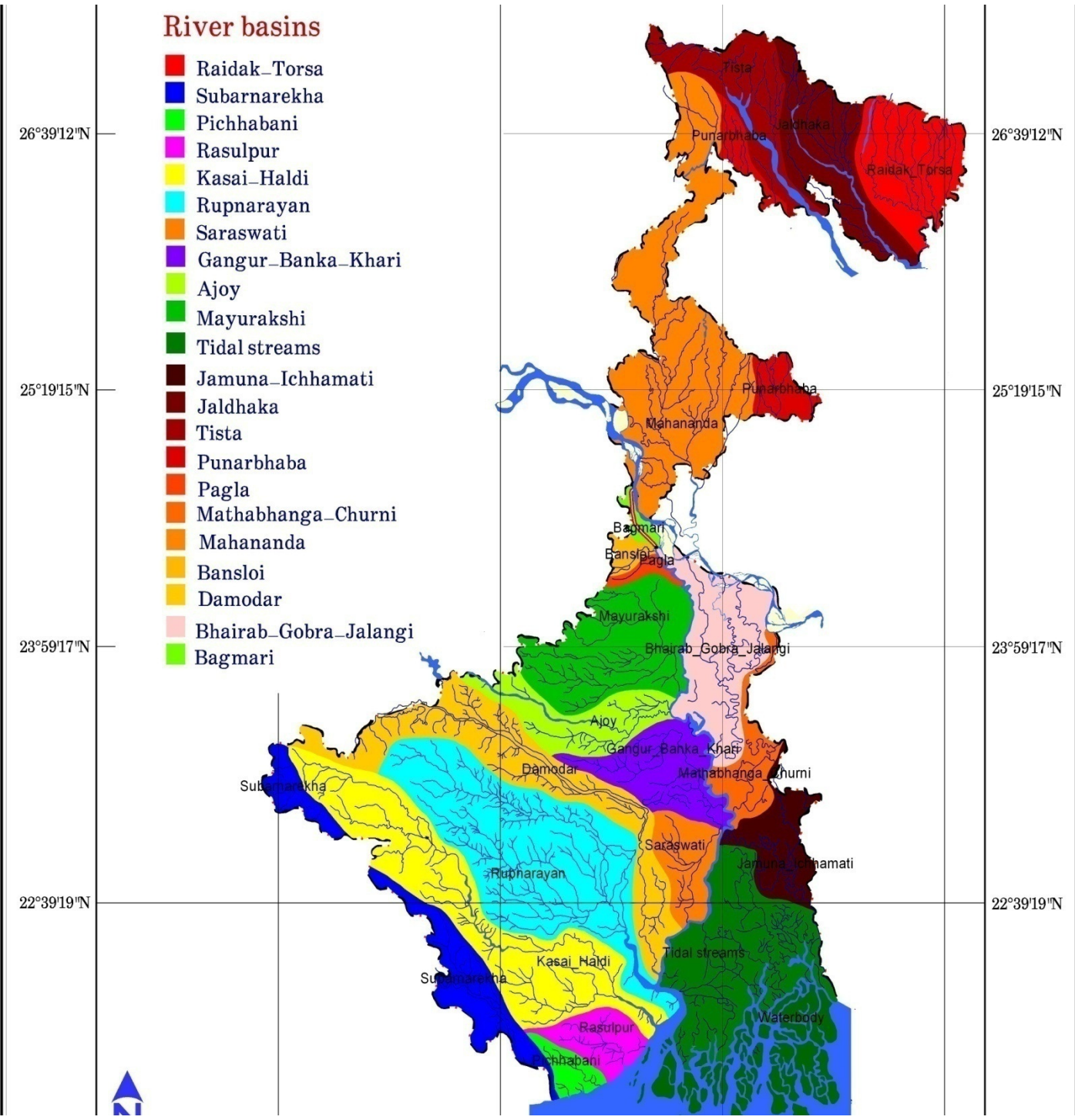


Experience of West Bengal

Kalyan Rudra

River basins

- Raidak-Torsa
- Subarnarekha
- Pichhabani
- Rasulpur
- Kasai-Haldi
- Rupnarayan
- Saraswati
- Gangur-Banka-Khari
- Ajoy
- Mayurakshi
- Tidal streams
- Jamuna-Ichhamati
- Jaldhaka
- Tista
- Punarbhaba
- Pagla
- Mathabhanga-Churni
- Mahananda
- Bansloi
- Damodar
- Bhairab-Gobra-Jalangi
- Bagmari



Objectives of river management in West Bengal

- Flood control
- Resuscitation of navigational channel leading to port of Kolkata
- Irrigation and Power generation
- Pre-mature land reclamation in Sundarbans

Section : I

FLOOD CONTROL

The temporal inequality of rainfall causes hydrological extremes:

FLOOD

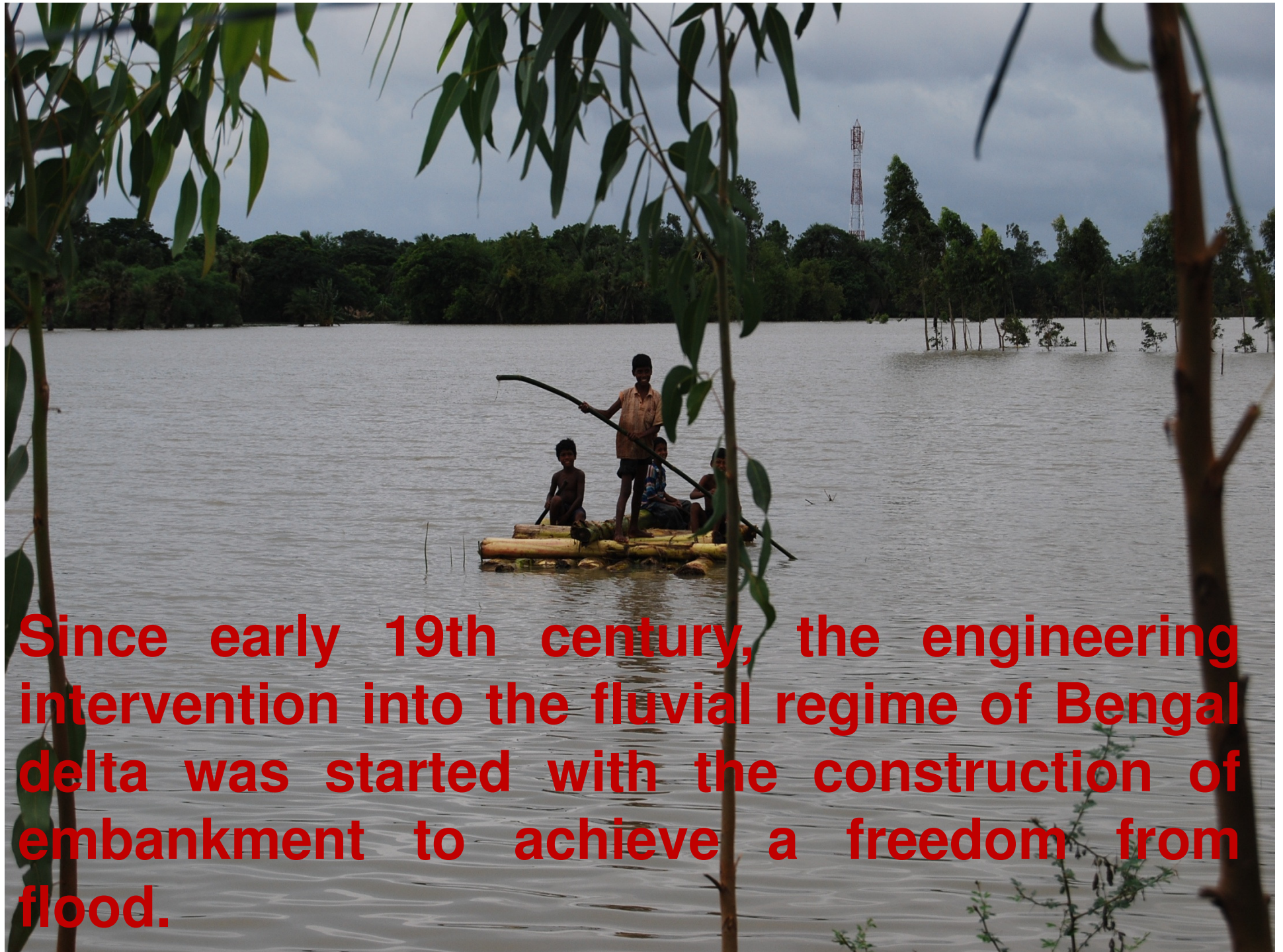
and

DROUGHT



The people of rural Bengal welcome low-intensity flood as it leaves behind fertile silt on agricultural field.



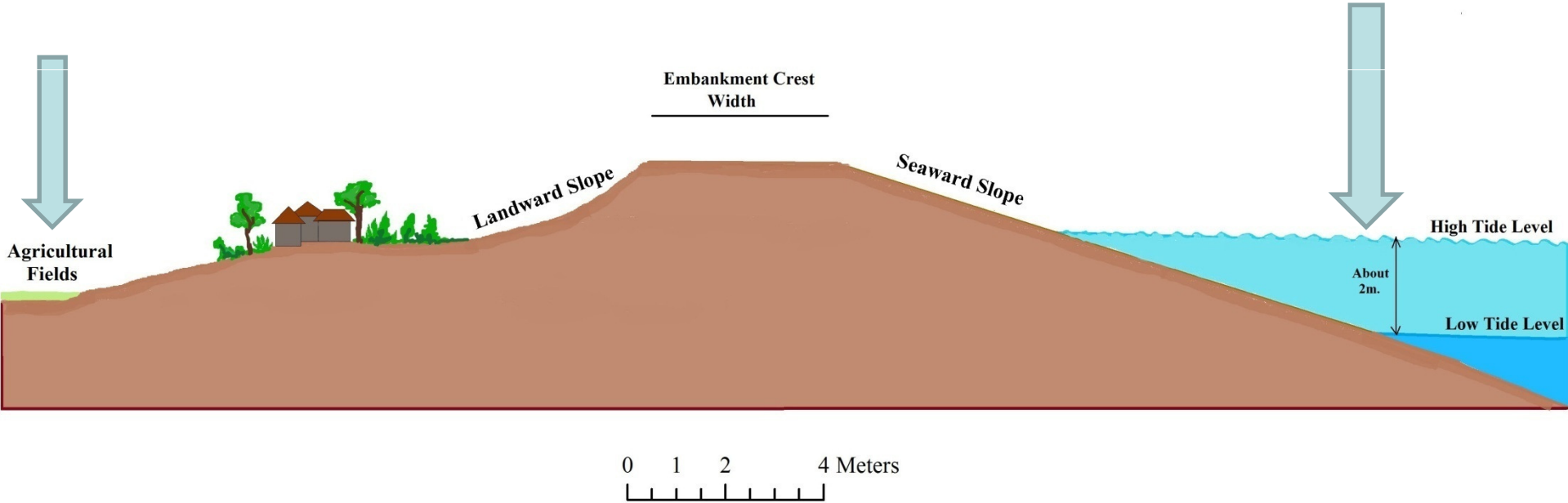


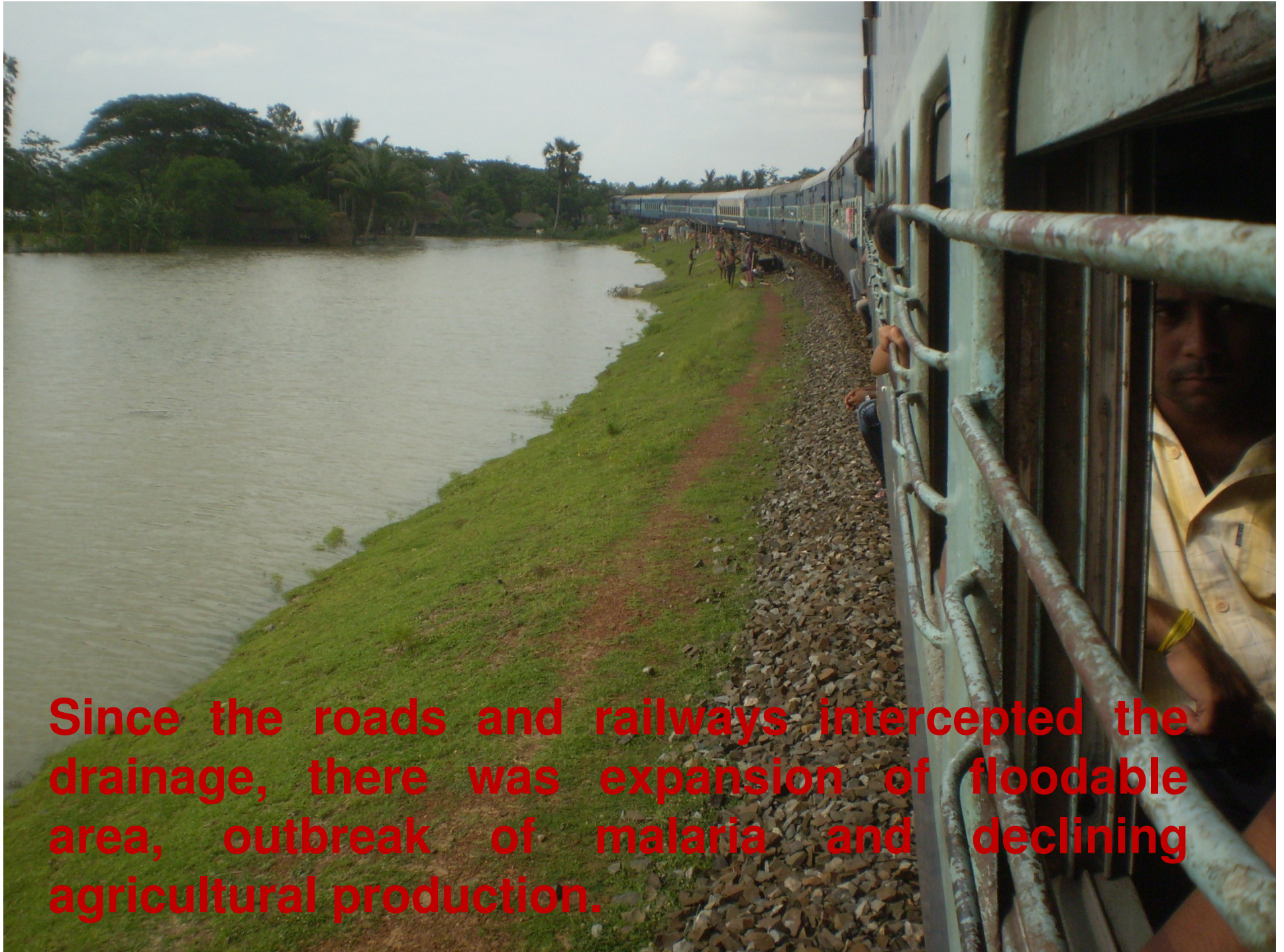
Since early 19th century, the engineering intervention into the fluvial regime of Bengal delta was started with the construction of embankment to achieve a freedom from flood.



- ❑ It was the beginning of a new era to control the natural hydrological system
- ❑ The embankment ensured protection against low-intensity flood but led to the decay of rivers.
- ❑ Presently 10500km long embankment ensures protection from low-intensity flood but impairs sediment dispersal.

SECTION ALONG RANGABELIA GHAT (GOSABA)

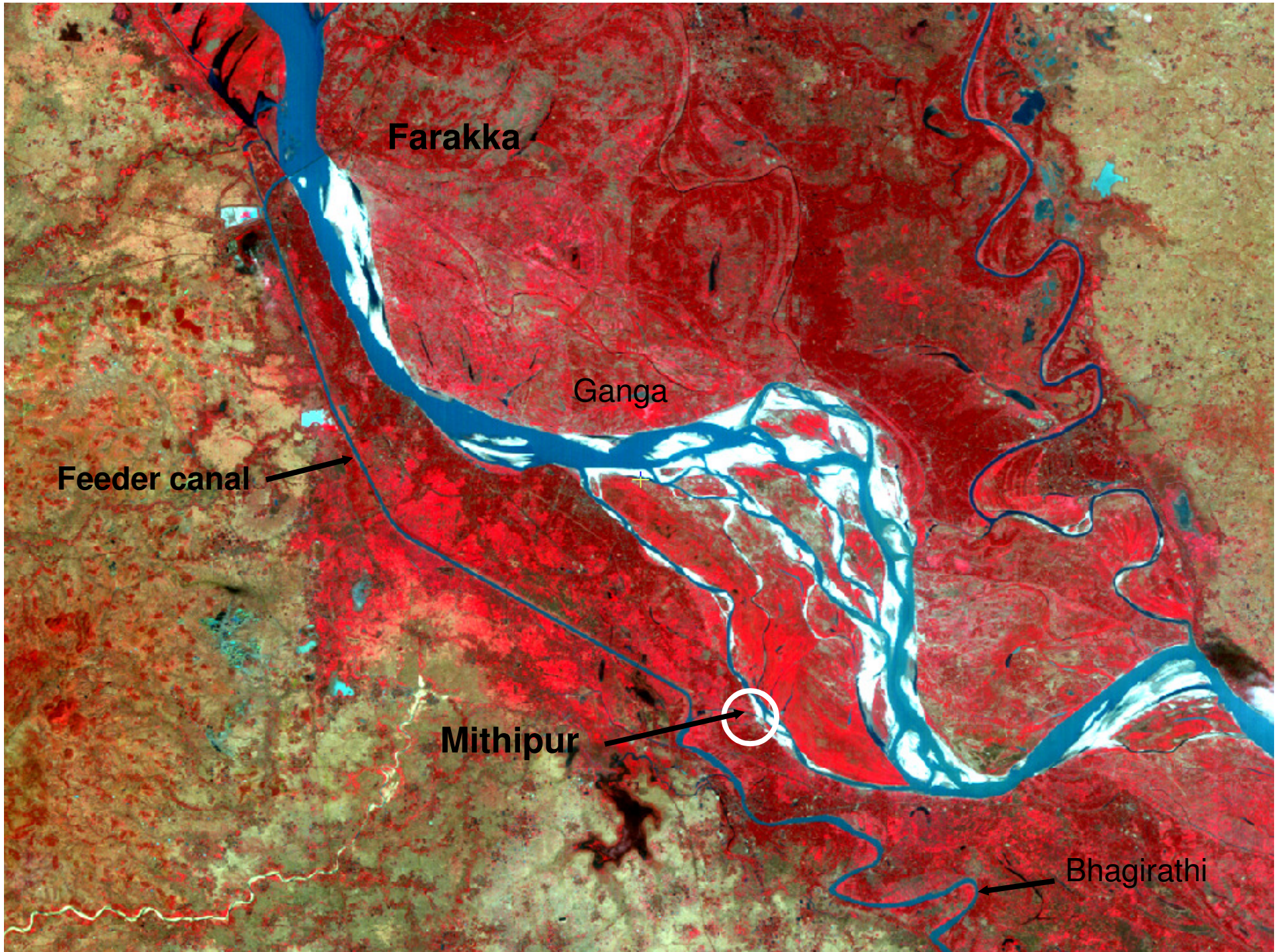




Since the roads and railways intercepted the drainage, there was expansion of floodable area, outbreak of malaria and declining agricultural production.

Section: II

Resuscitation of navigational
status of the port of Kolkata



Farakka

Ganga

Feeder canal

Mithipur

Bhagirathi

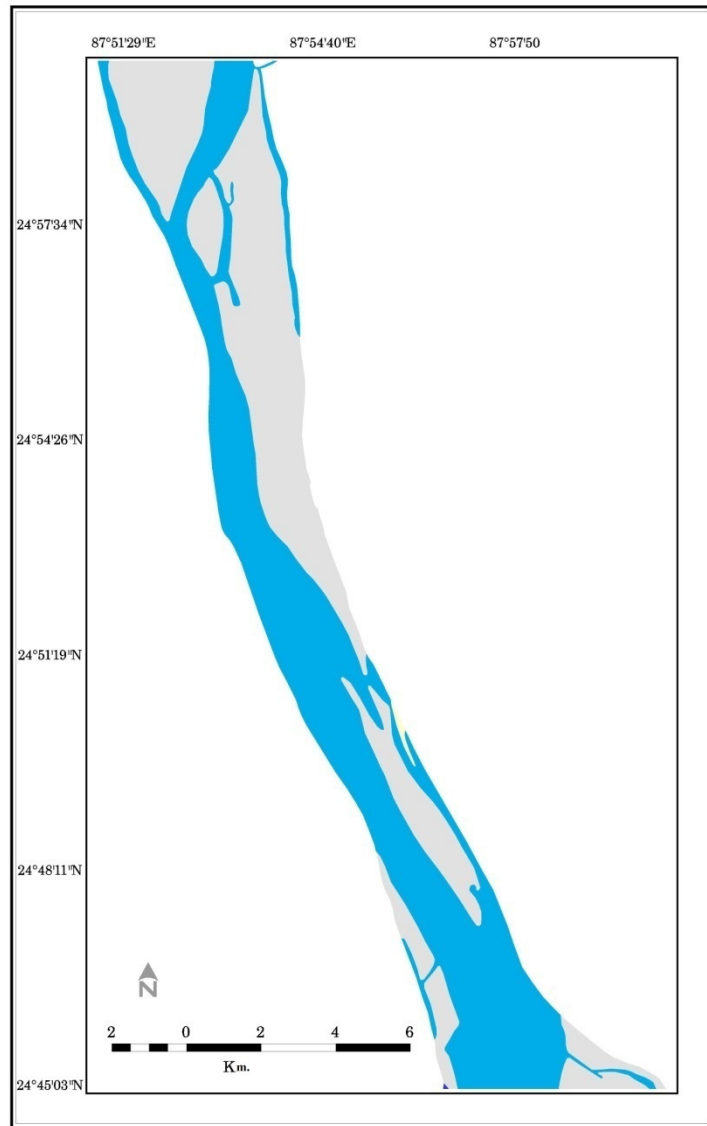


← Kolkata

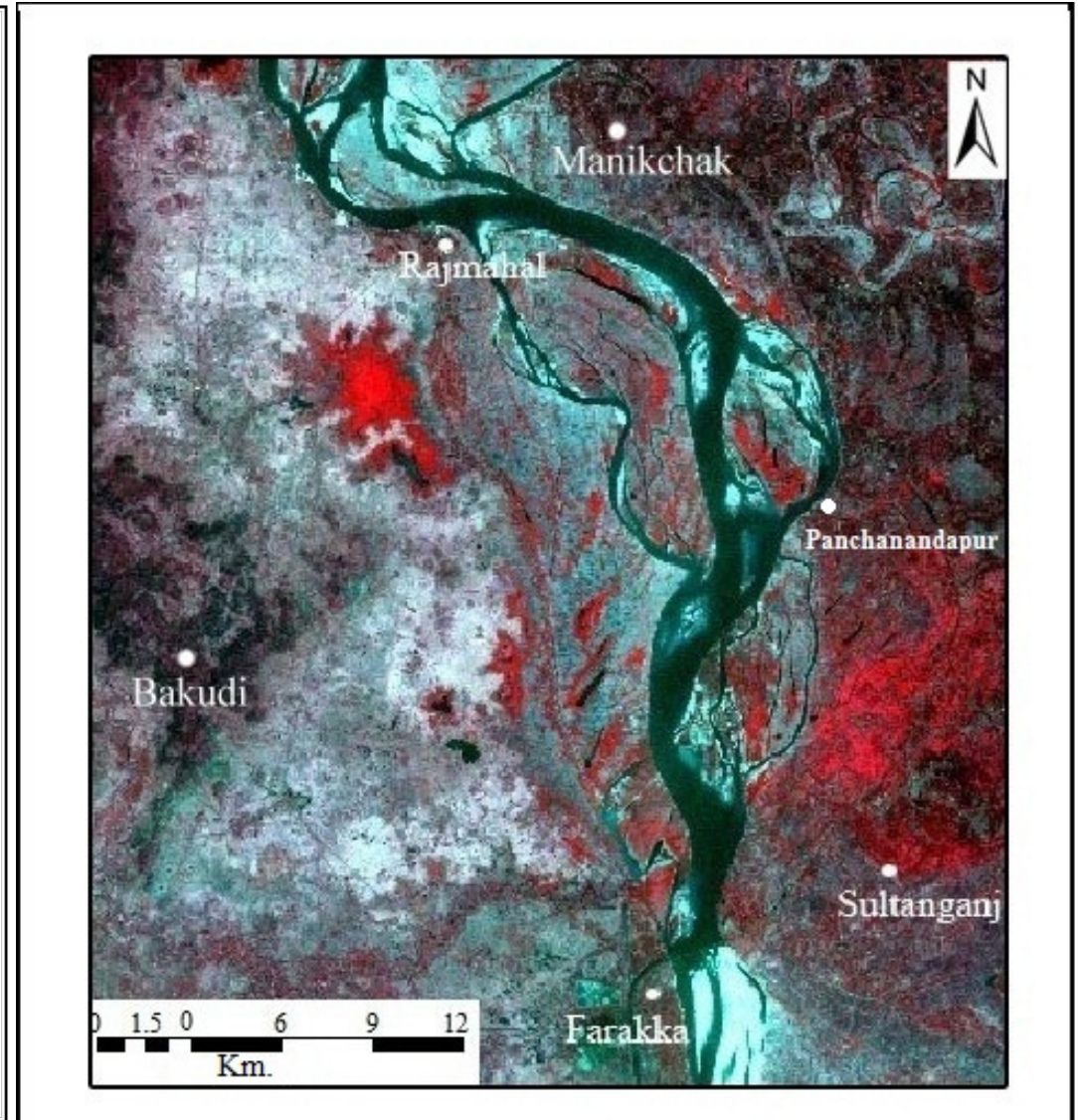


The induced water from Farakka was supposed to flush the sediment load from the estuary & make channel navigable.

The course of the Ganga in 1922



The course of the Ganga in 2010





The mighty Ganga impinges on its bank with immense power during the peak monsoon period and causes damage to human settlement.

The Government has so far incurred an expenditure of more than Rs. 300 crore in its futile attempts of bank protection. No one paid heed to the rehabilitation of erosion-victims.

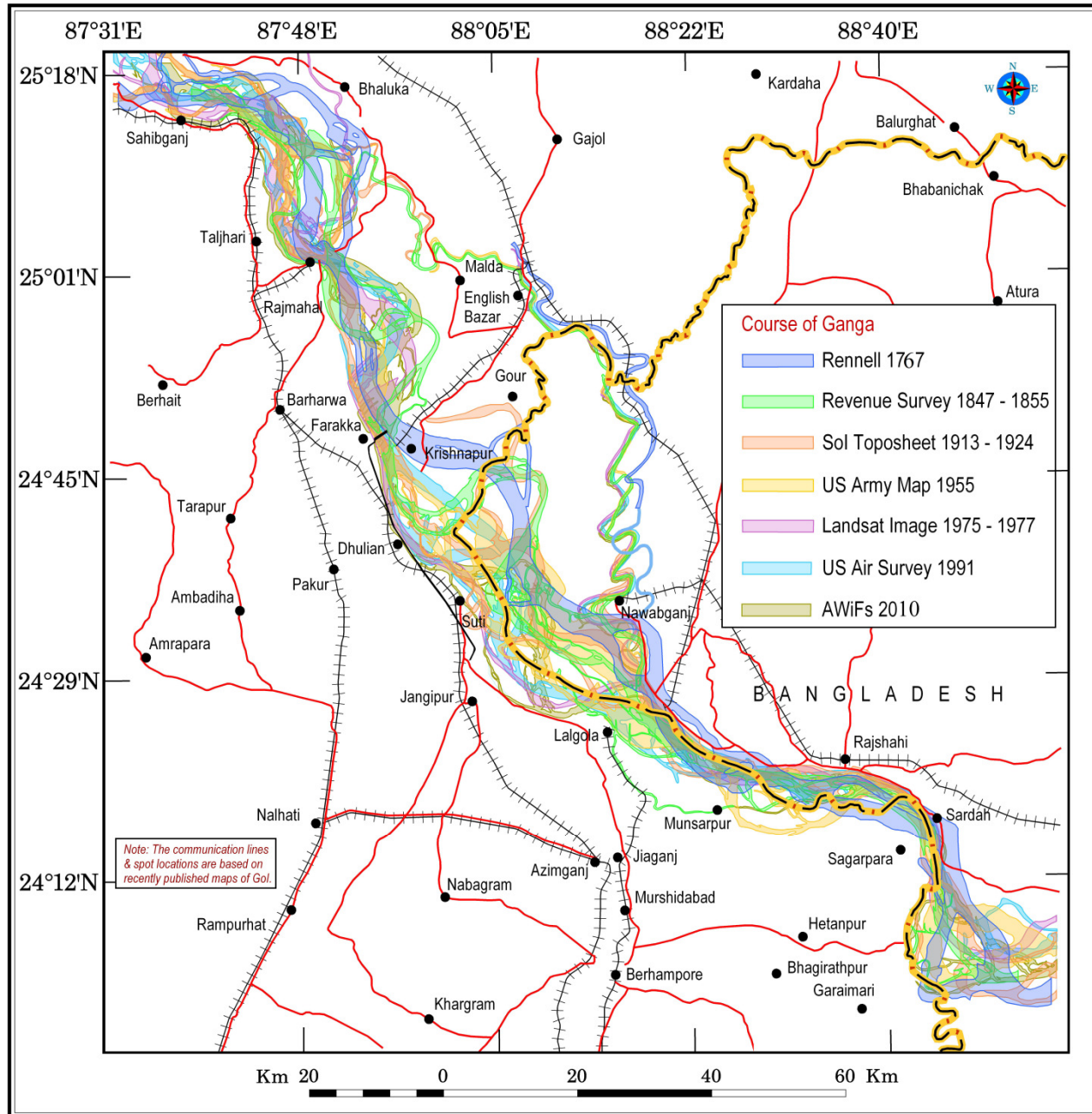


About half a million people have so far lost their homelands and suffer from identity crisis.



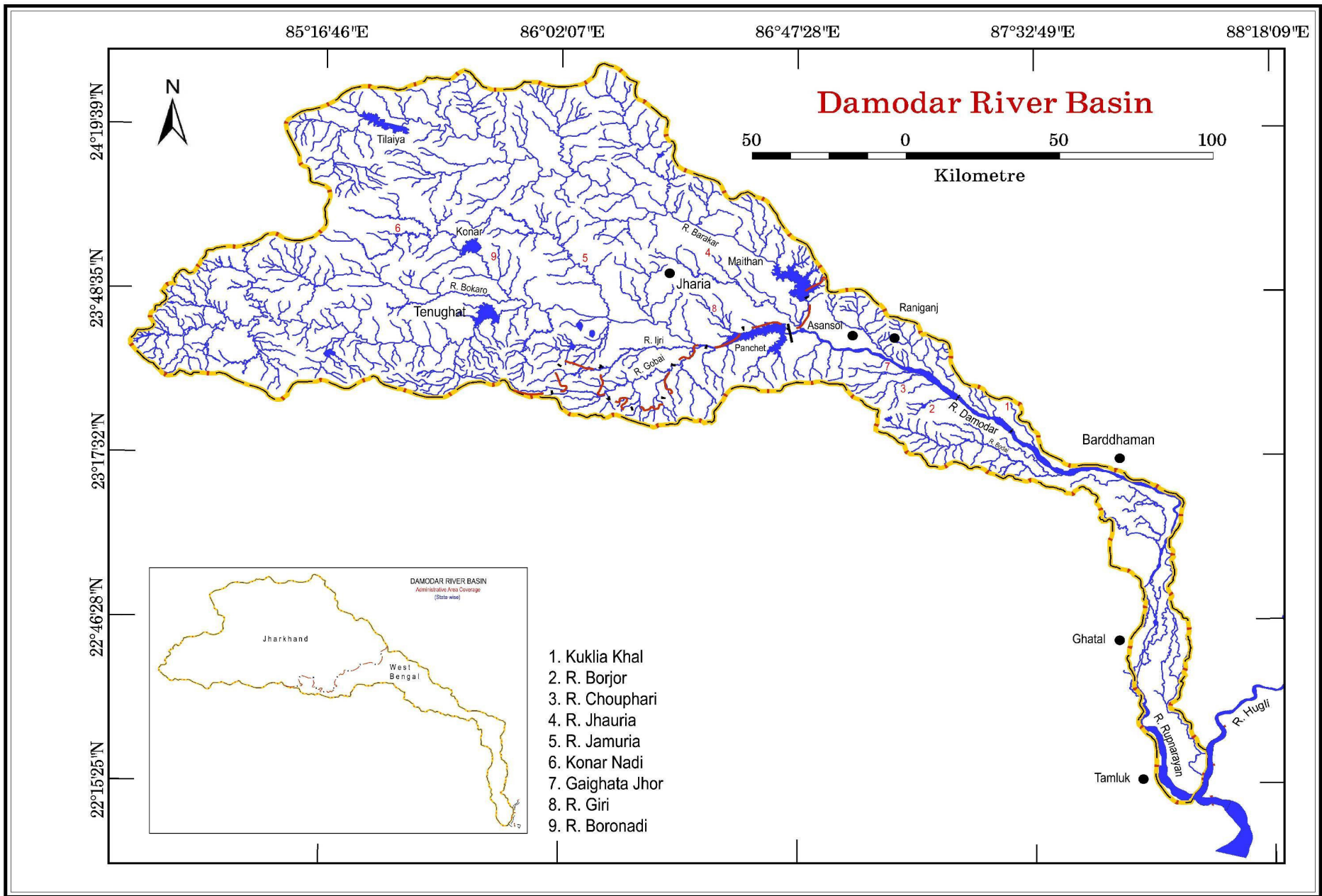
The Oscillating Ganga : 1767 - 2010

Source: Rennell, Revenue Survey, SoI Topo map, US Army, Landsat, US Air Survey & AWiFs

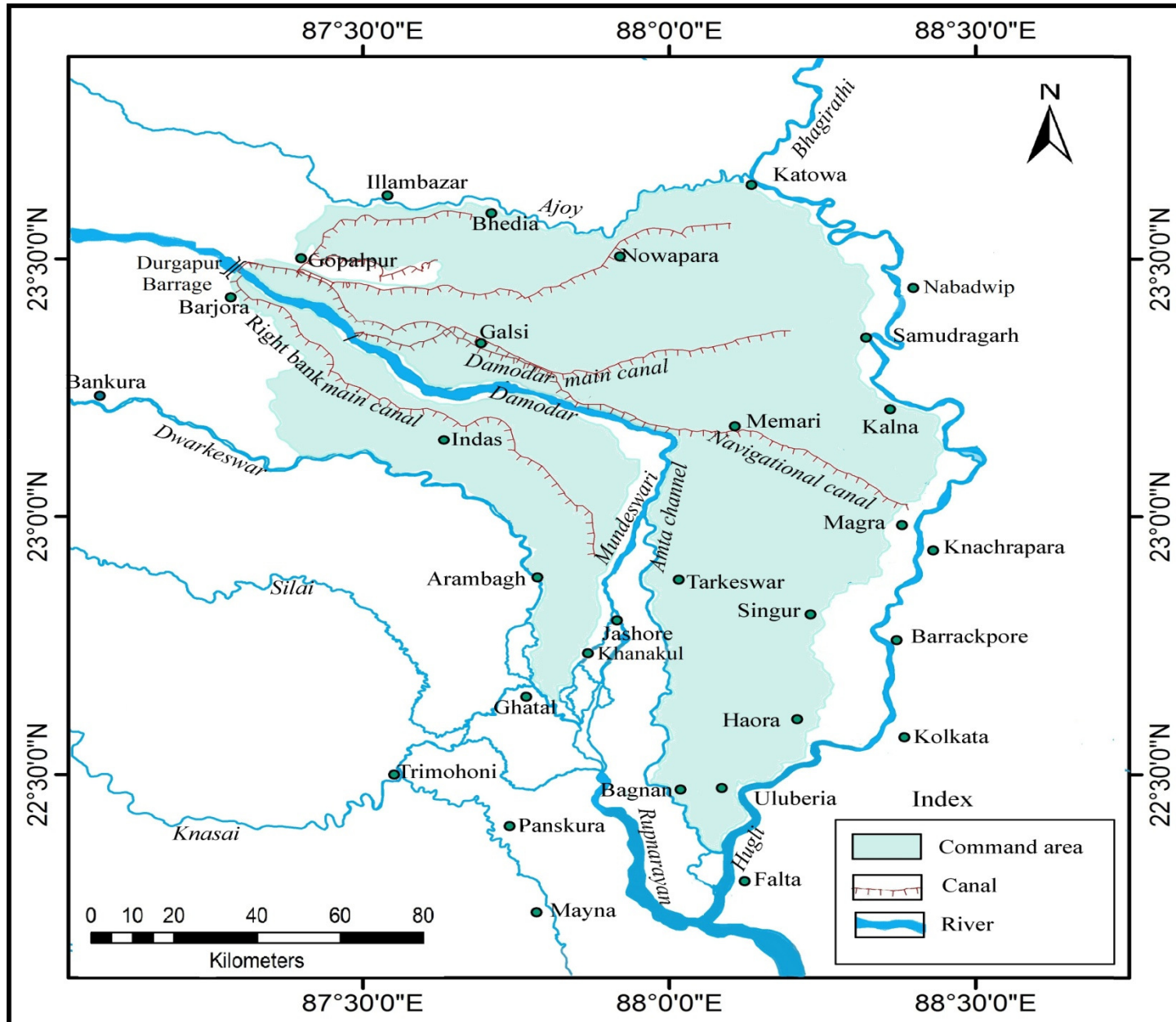


Section: III

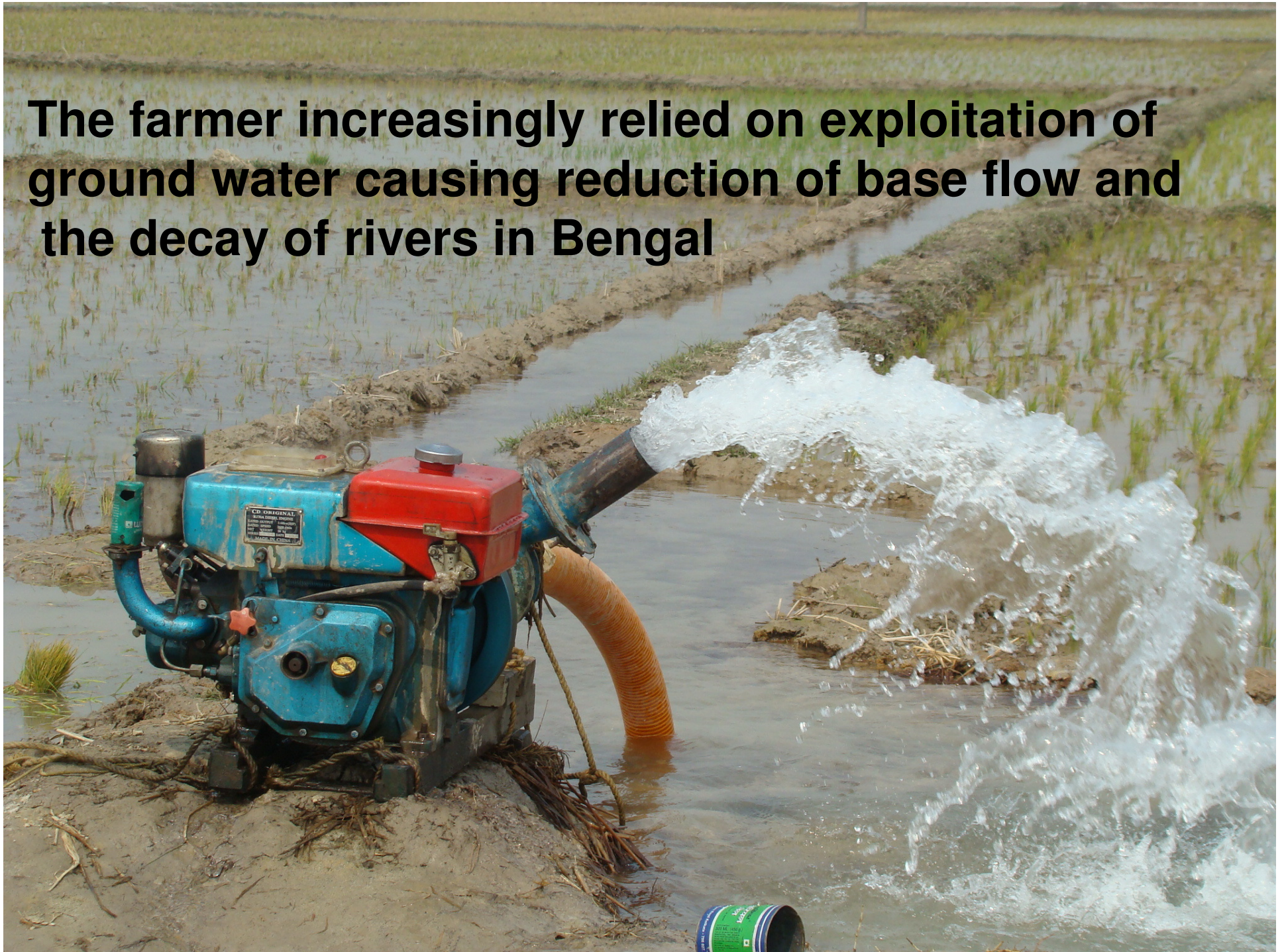
Irrigation



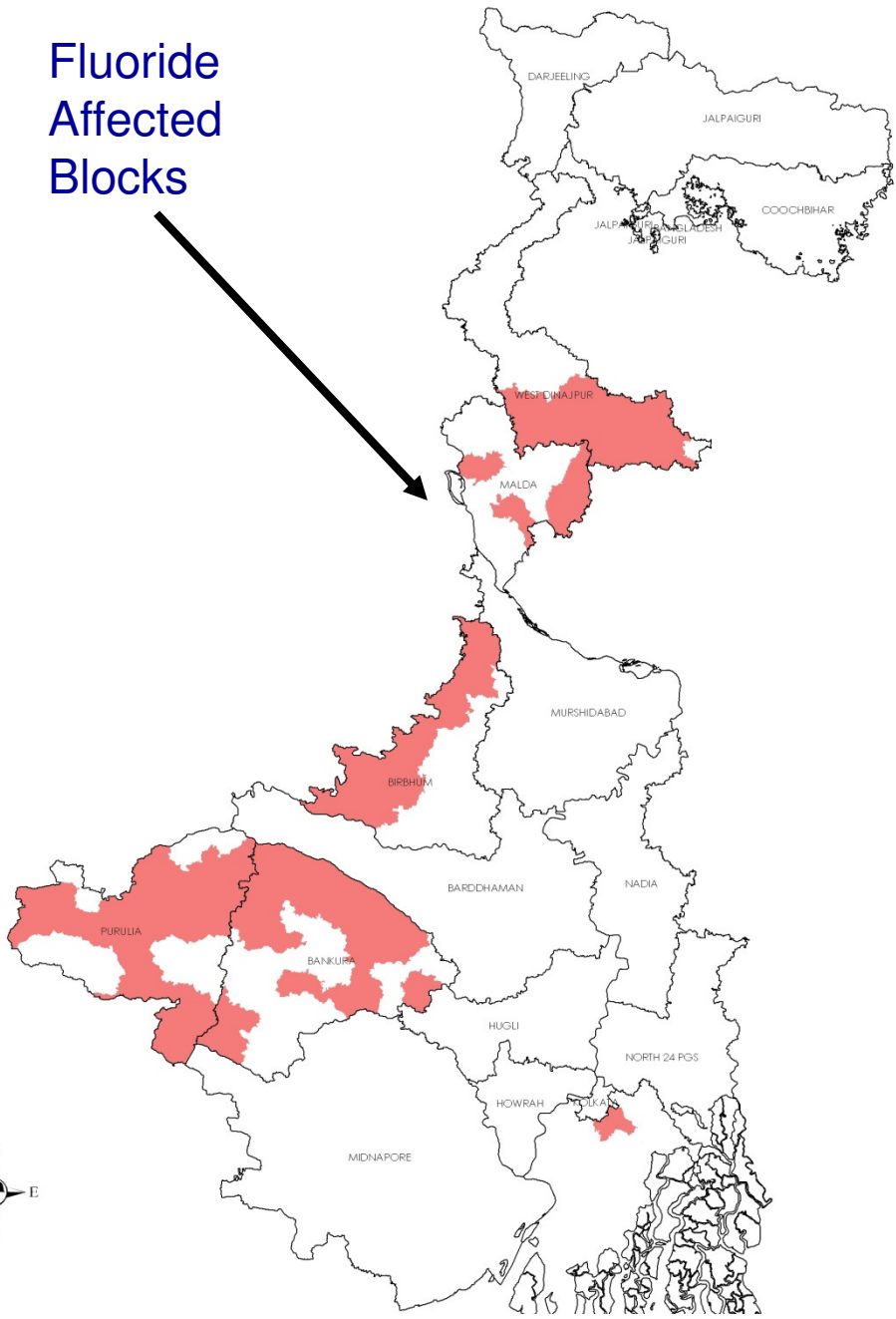
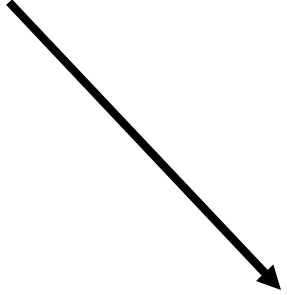
COMMAND AREA OF DVC



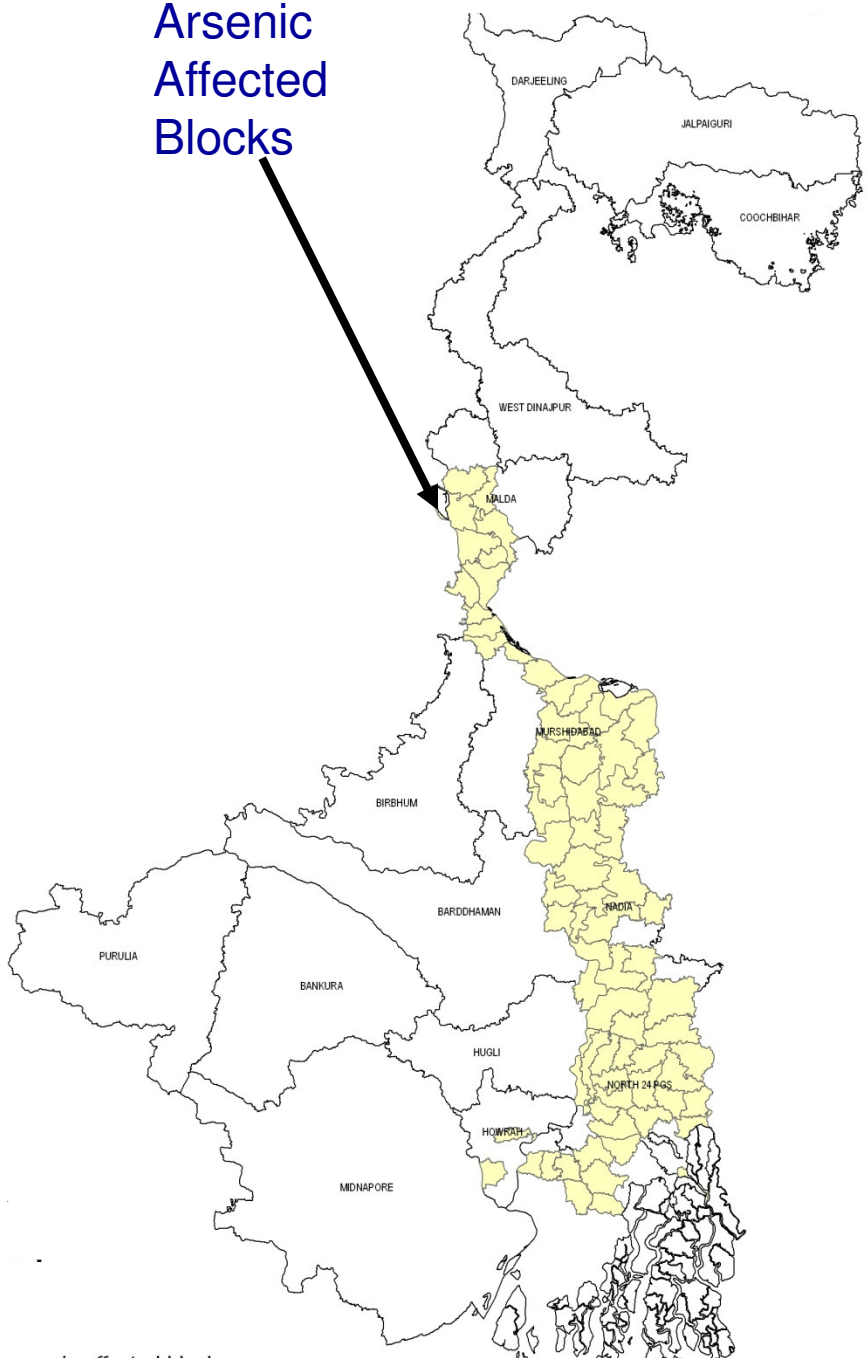
The farmer increasingly relied on exploitation of ground water causing reduction of base flow and the decay of rivers in Bengal



Fluoride
Affected
Blocks



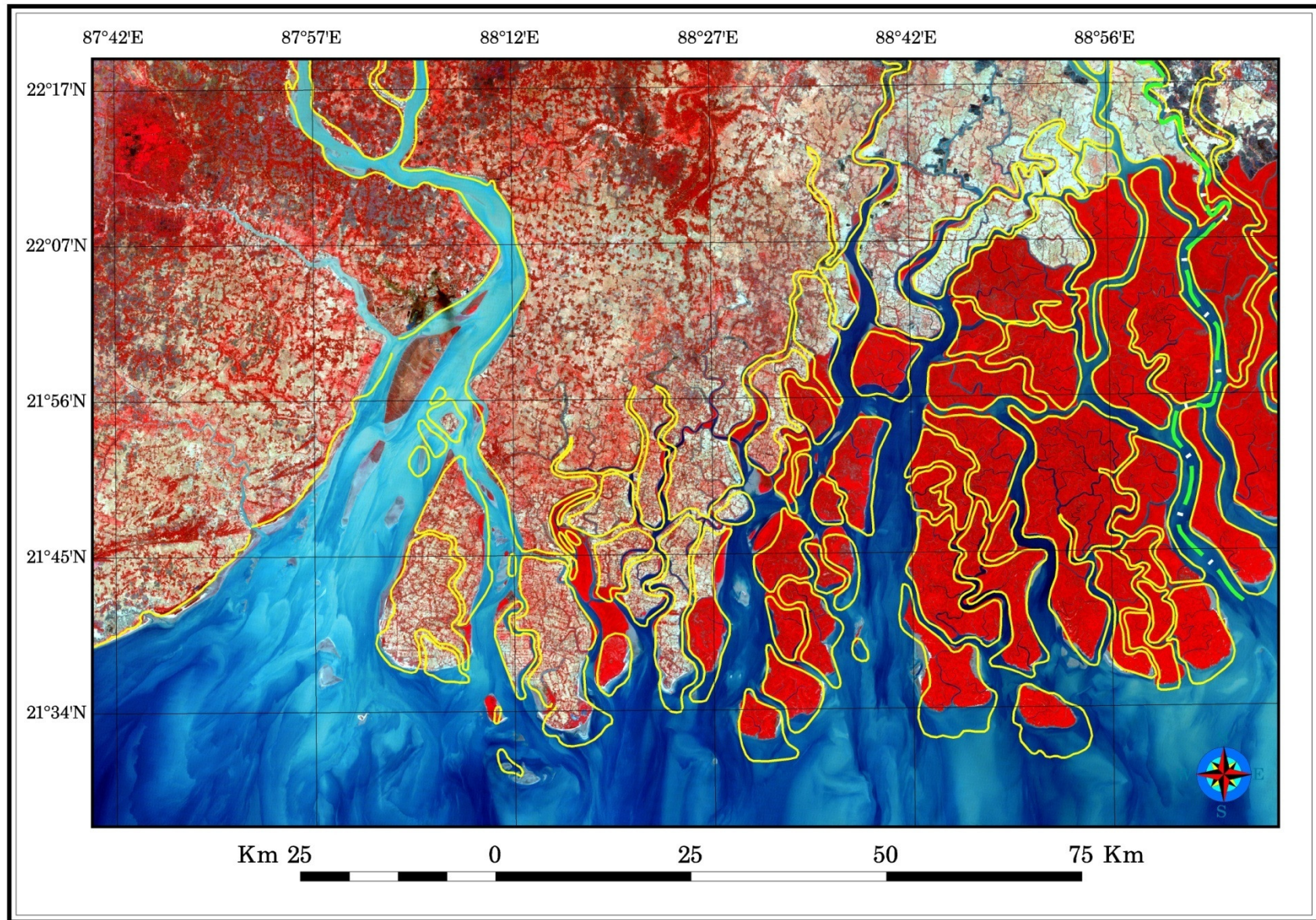
Arsenic
Affected
Blocks



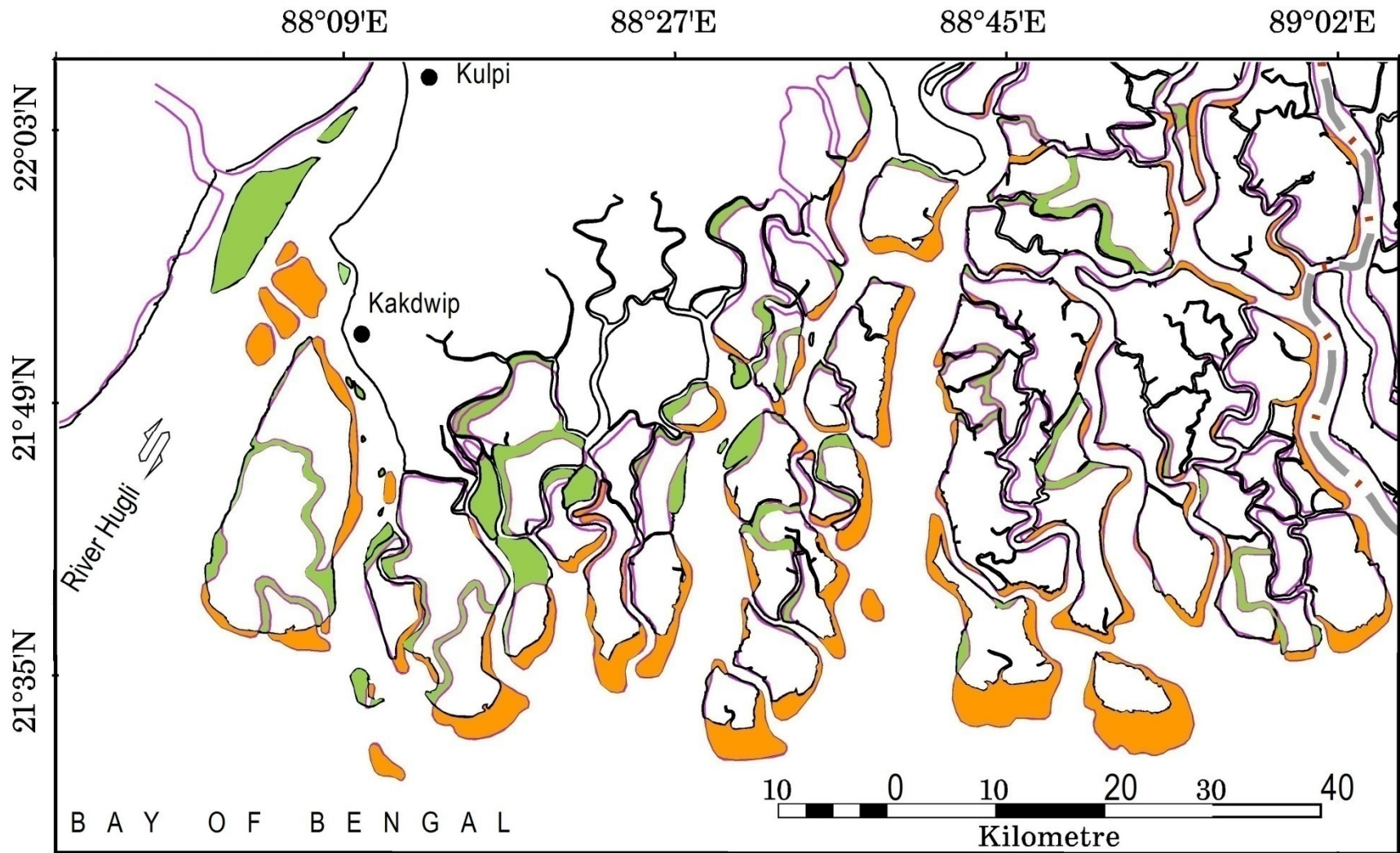
Section: IV

**Pre-mature land reclamation in
sundarbans**

Changing Configuration of West Bengal Coast Over a period of 94 years (1917 - 2010)



THE ENCROACHING BAY OF BENGAL (1917 - 2010)



— COASTLINE 1917
— COASTLINE 2010

■ AREA ACCRETED
■ AREA ERODED

The possible explanations of coastal retrogradation:

- 1) Subsidence of the land due to autocompaction of the sediment.**
- 2) Silt-trapping by man made reservoirs and wetlands of the delta.**
- 3) Continuous flush of the sediments into the “Swatch of no ground”- the submarine canyon of the Bay of Bengal.**
- 4) The tidal invasion from the sea.**
- 5) Global warming and thermal expansion of sea-water.**



THANK YOU