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POTENTIAL IMPACTS OF THE SUPER SEA DYKE (SSD) AT RACH GIA BAY ON WATER SUPPLY AND TOURISM IN THE MEKONG DELTA, VIETNAM

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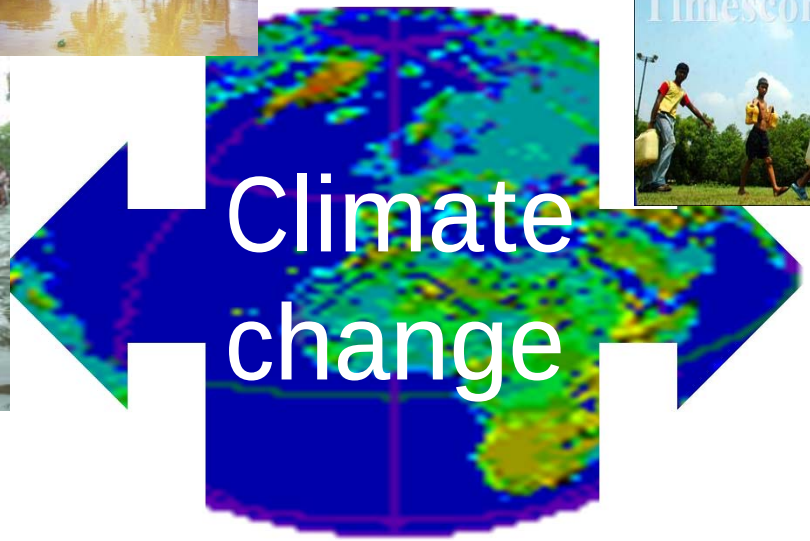
The Mekong River Basin
Characteristics:
CHINA
MYANMAR
VIET NAM
LAOS
THAILAND
CAMBODIA
LEGEND

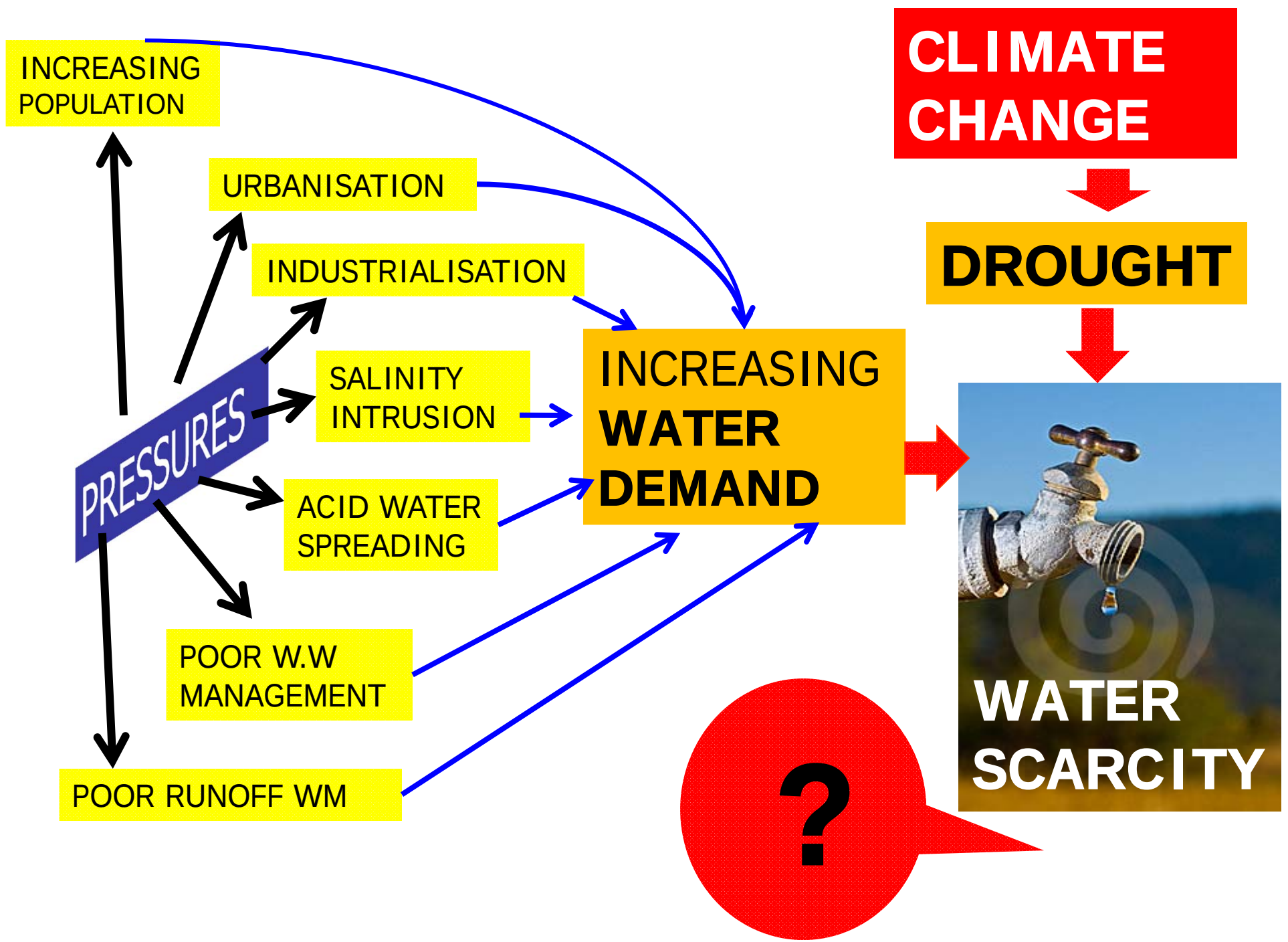

Northeast
Northwest
Red River Delta
North Central Coast
South Central Coast
Central Highlands
Mekong River Delta
Southeast

FLOODS

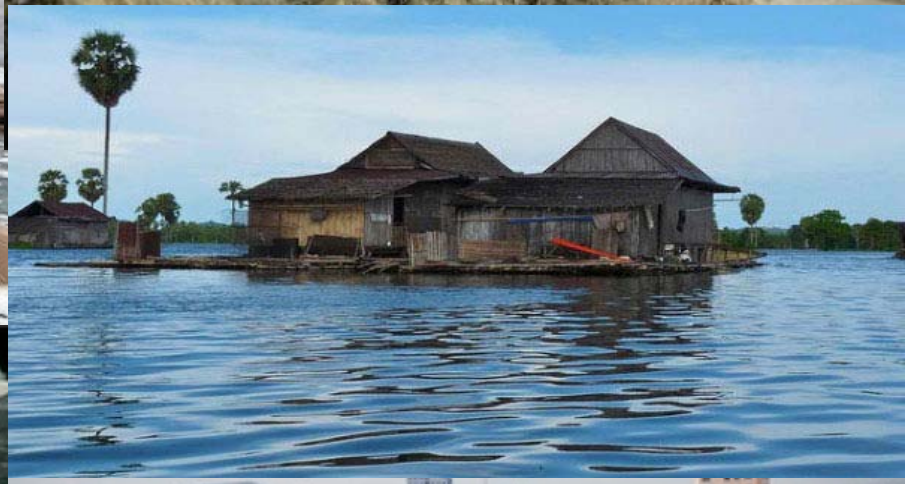


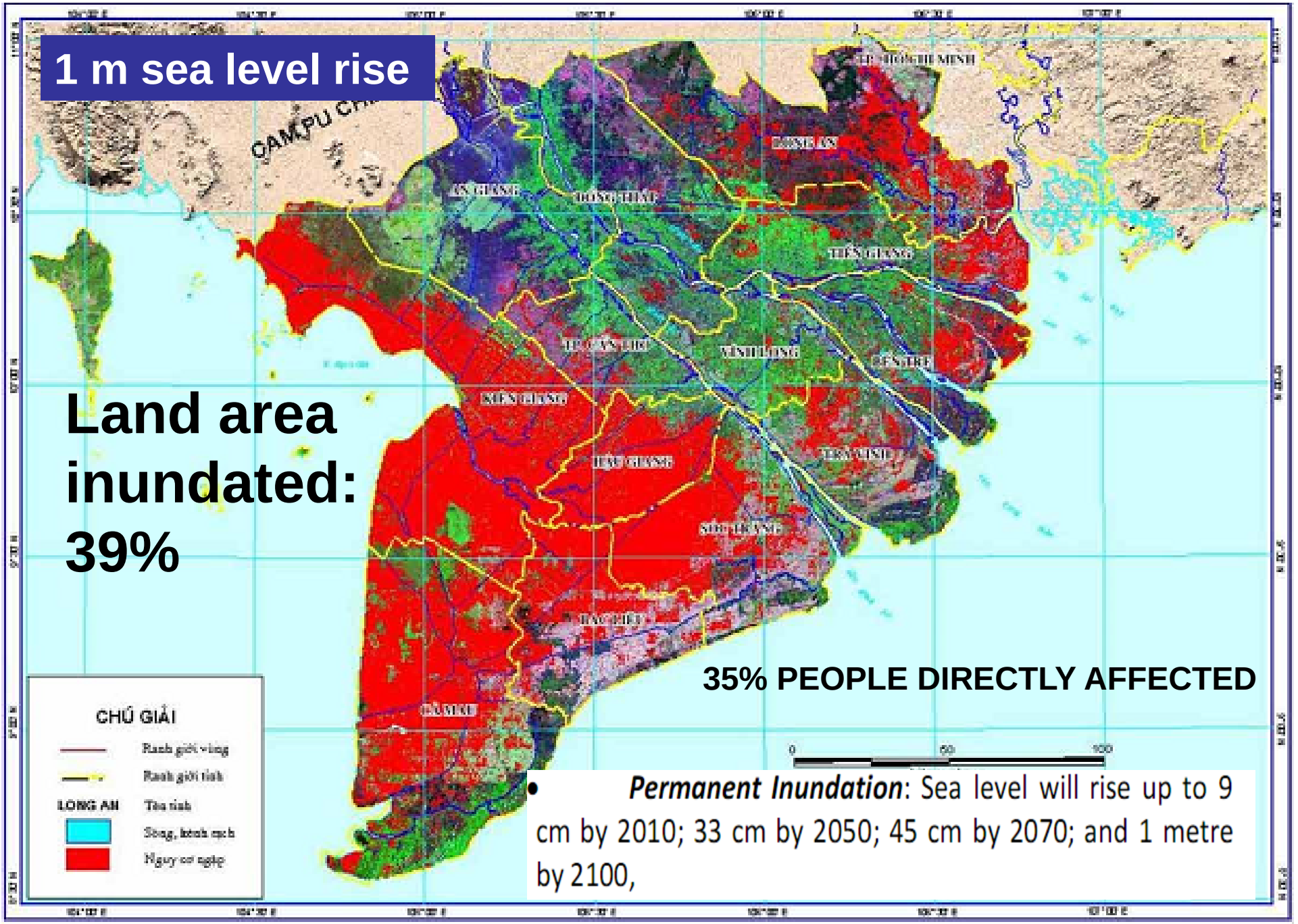
DROUGHTS

These two extreme weather conditions will occur much more often


INCREASING POPULATION
URBANISATION
INDUSTRIALISATION
SALINITY INTRUSION
ACID WATER SPREADING
POOR W.W MANAGEMENT
POOR RUNOFF WM
PRESSURES
INCREASING WATER DEMAND
CLIMATE CHANGE
DROUGHT
WATER SCARCITY
?

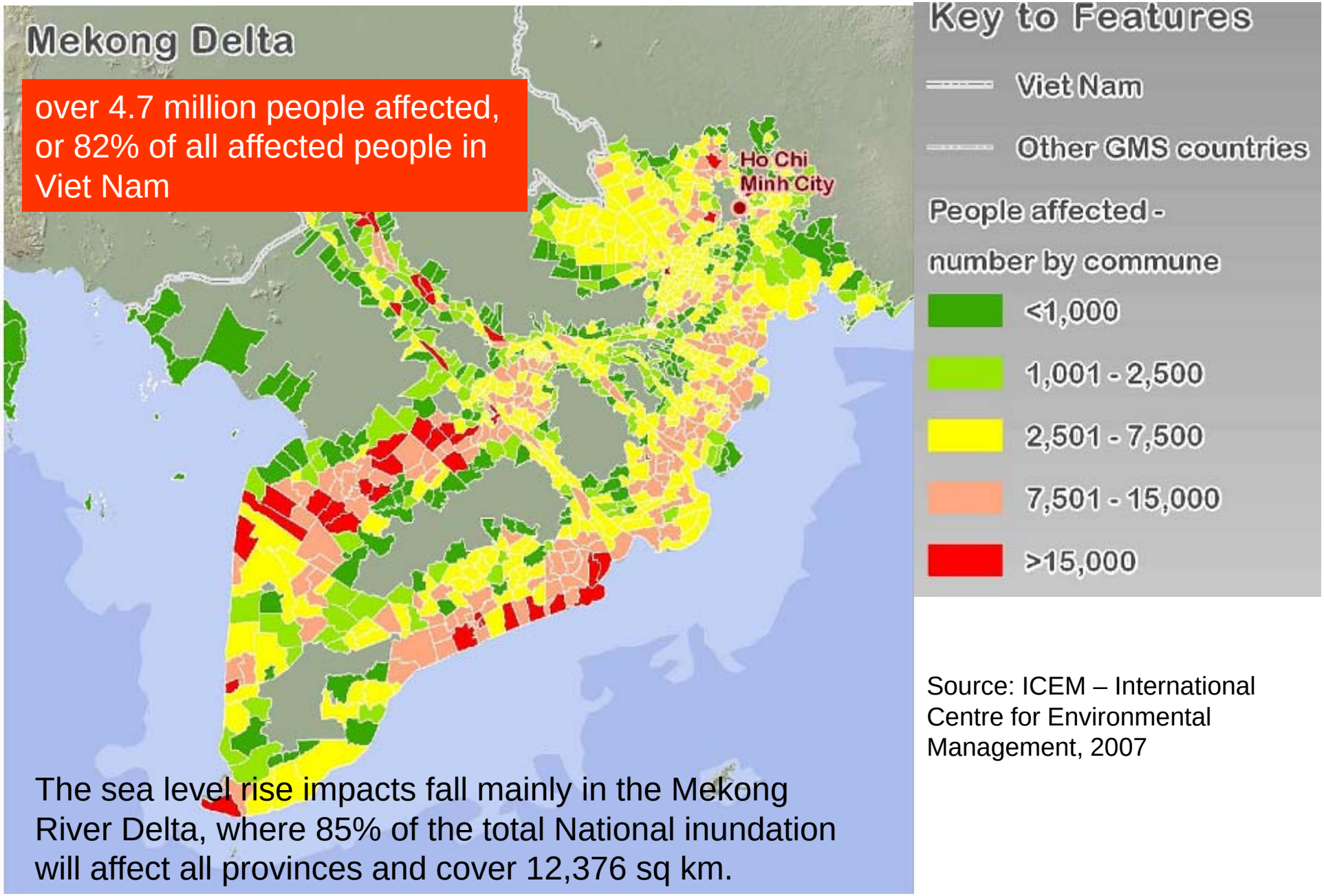
SEA LEVEL RISE





Source: MONRE 2009 & 2012

People affected by 1m Sea Level Rise



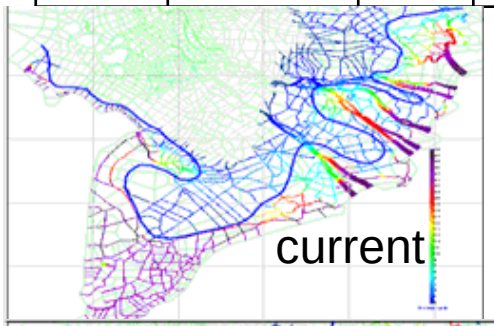
Source: ICEM – International Centre for Environmental Management, 2007

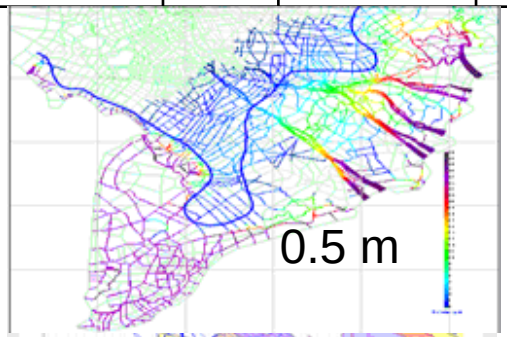
SALINITY INSTRUSION

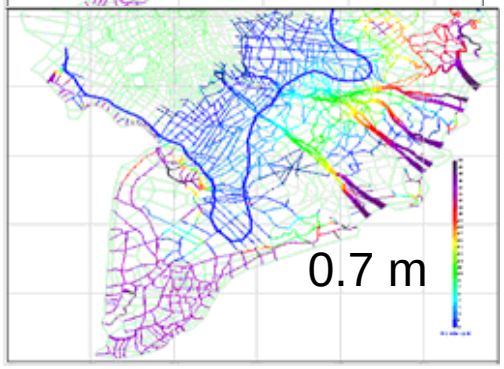
Area affected by saline water 4 g/l

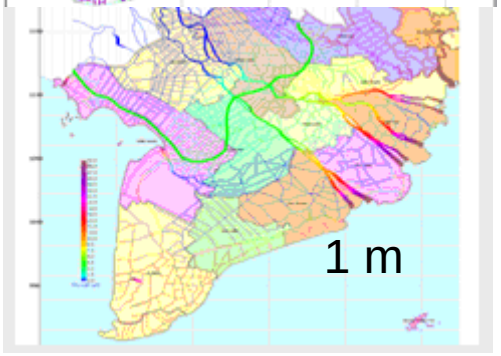
	Current		SLR 0.50 m		SLR 0.70 m		SLR 1.00 m	
Month	DT (ha)	(%)	DT (ha)	(%)	DT (ha)	(%)	DT (ha)	(%)
1	715.095	18,2	1.094.271	27,8	1.195.868	30,4	1.223.355	31,1
2	834.762	21,2	1.106.317	28,1	1.260.592	32,1	1.374.932	35,0
3	909.797	23,1	1.355.074	34,5	1.517.602	38,6	1.760.823	44,8
4	1.147.450	**29,2**	2.012.146	51,2	2.188.518	55,6	2.473.033	62,9
5	1.002.417	25,5	2.308.362	58,7	2.440.536	62,1	2.791.582	**71,0**
6	890.236	22,6	1.671.771	42,5	1.818.105	46,2	2.215.461	56,3

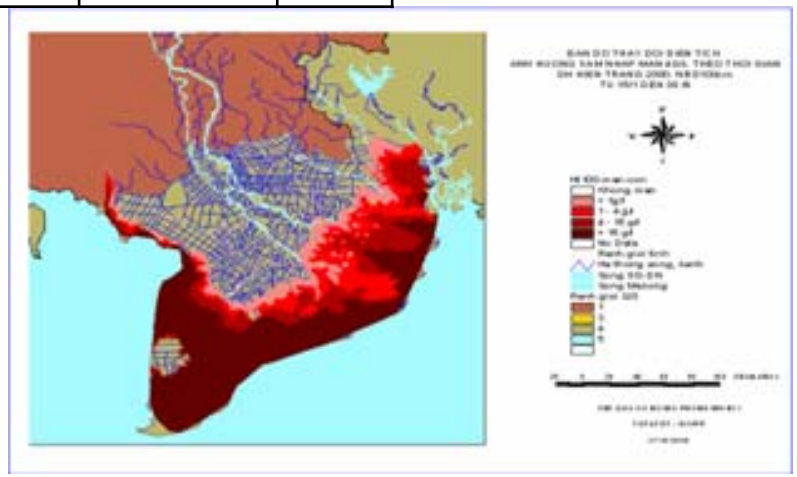
Currently: 50 km
SLR 1 m: up to 90 km









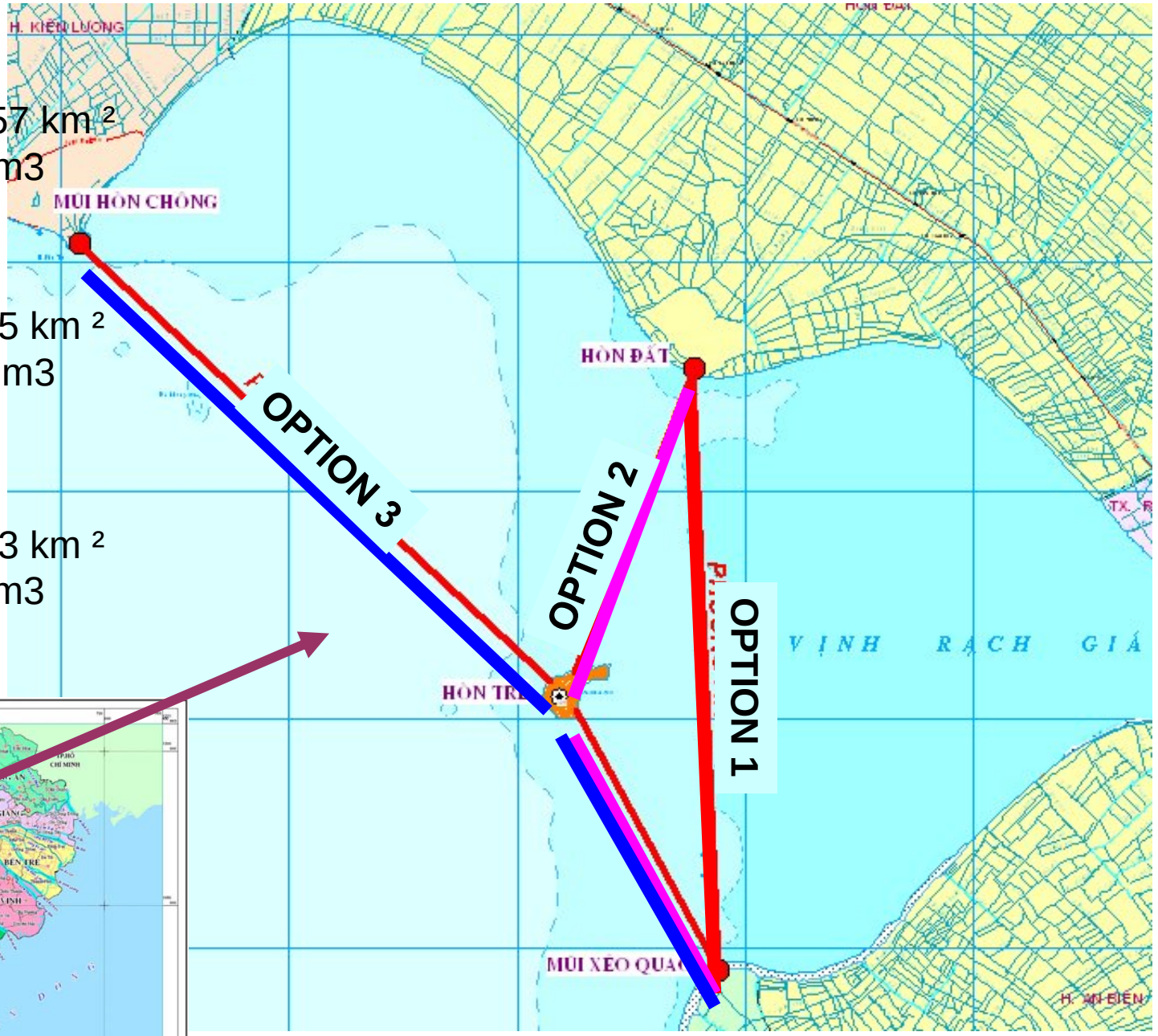


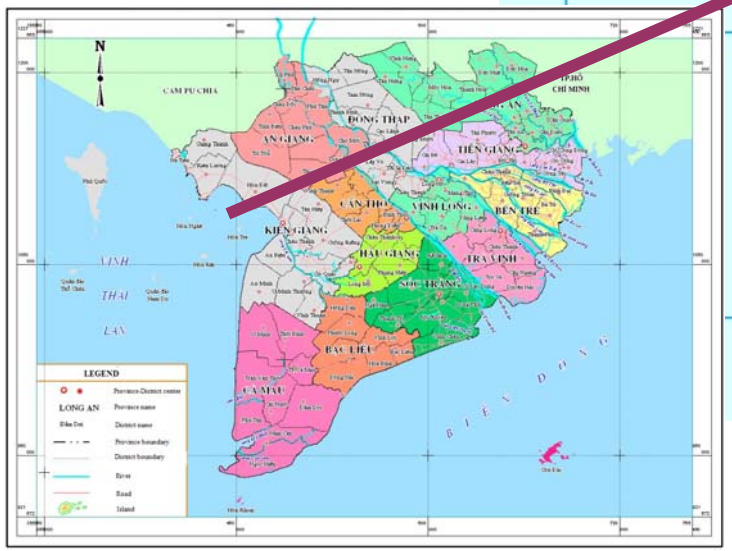
Source: To Quang Toan, SIWRR

OP1:
surface water area: 357 km ²
Capacity: 600 Million m3
length 30 km

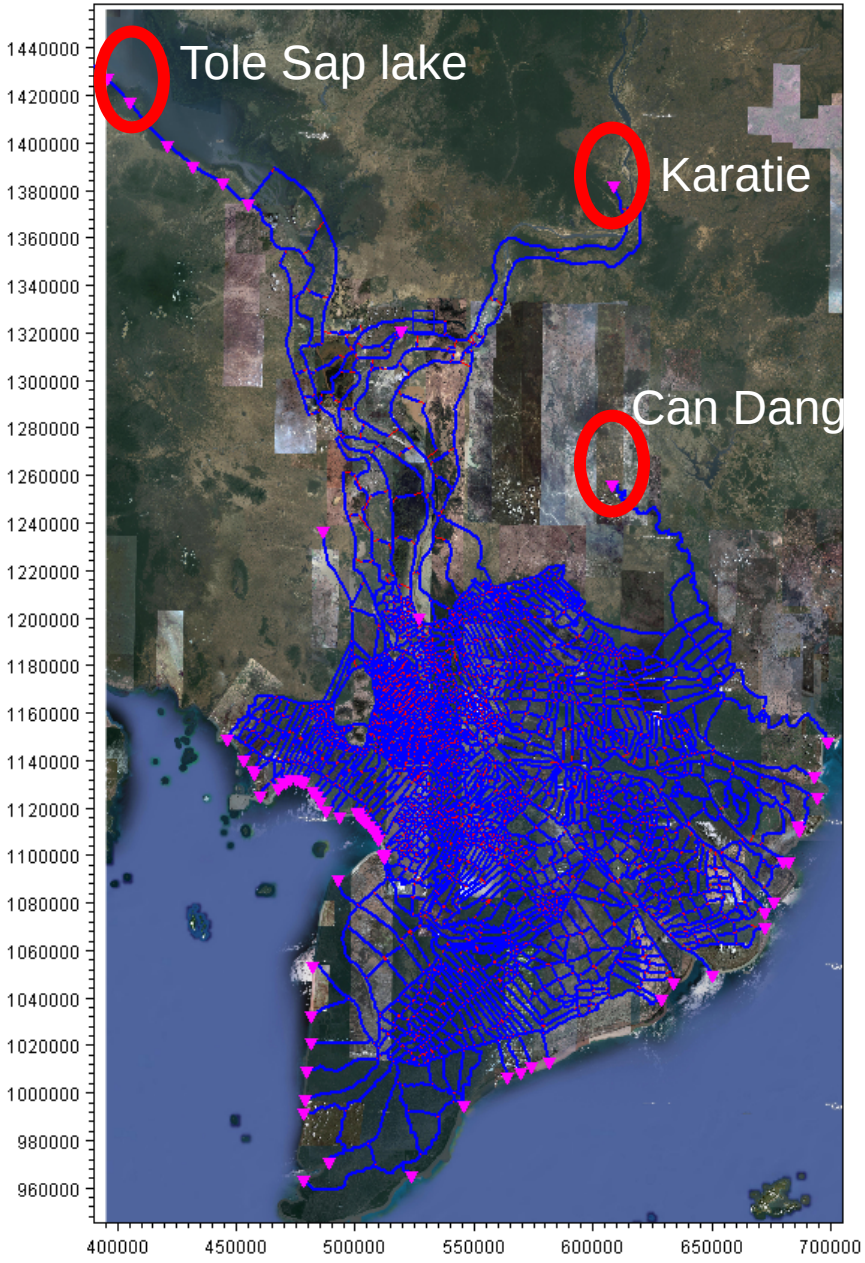
OP2:
surface water area:425 km ²
Capacity: 795 Million m3
length 31.8 km

OP3:
surface water area:823 km ²
Capacity: 2.58 billion m3
length 47.5 km






BINH TRI PORT
TL11
CCN KIÊN LƯƠNG-
BA HÒN- HÒN CHÔNG
Routes connecting dikes
Sluice gate B=600m
QUẦN ĐẢO BÀ LỤA
HON CHONG
HON CHONG PORT
LUYNH HUYNH PORT
LANG VEN BIỂN PHÍA NAM
THỊ TRẤN HÒN ĐẤT
CCN HÒN ĐẤT
THỊ TỨ MÌ HIỆP SƠN
QL
80
THỊ TRẤN SÓC SƠN
T.TRẤN THỔ SƠN
HON DAT
Routes connecting dikes
Pa 2 : Hon Dat - Hon Tre: L=15.54 km
Sluice gate B=600m
Navigation lock B=40.0m
Navigation lock B=40.0m
Sluice gate B=600m
Pa 1: Hon Dat - Xeo Quao: L=30.18 km
Pa 3 : Hon Chong - Hon Tre: L=31.38 km
RACH GIA PORT
Sluice gate B=200m
HÒN TRE
Navigation lock B=40.0m
Pa 2 : Hon Tre - Xeo Quao: L=16.26km
Sluice gate B=600m
THỊ XÃ MINH LƯƠNG
Navigation lock B=40.0m
Sluice gate B=600m
XEO QUAO
Routes connecting dikes
TAC CAU PORT - A = 26,2 HA
Q = 500000 T/YEAR

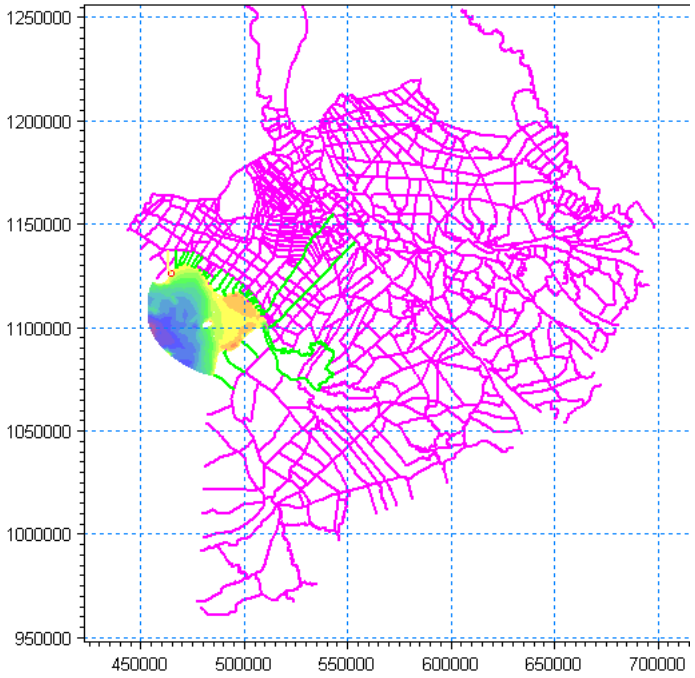


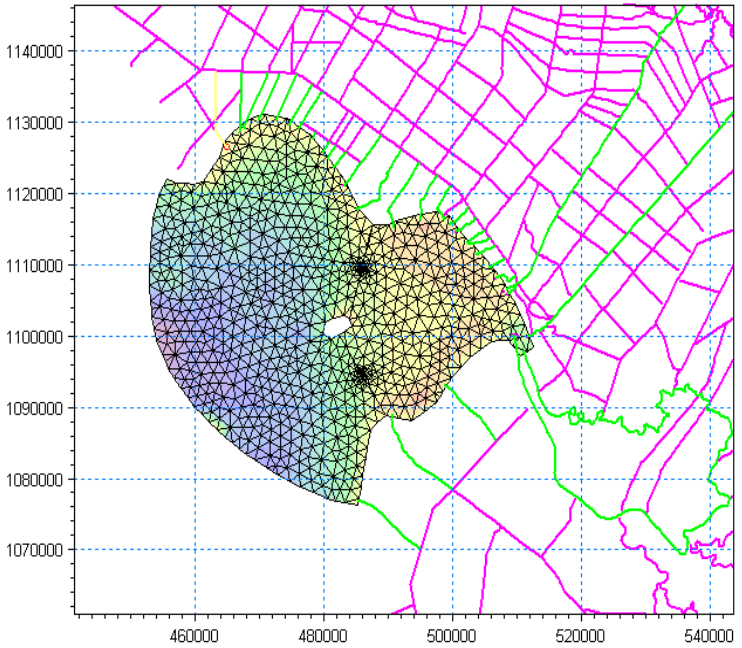
1 D

1D-hydraulic network
from Karatie to the East Sea
more than 2500 branches of rivers and canals,
12500 cross-sections and
more than 2500 structures

For water discharge, the boundaries have been taken at Karatie, Tole Sap lake and East Vai Co river.

For water level, the boundaries havebeen taken at the boundaries from Soai Rap mouth to Vinh Te mouth.





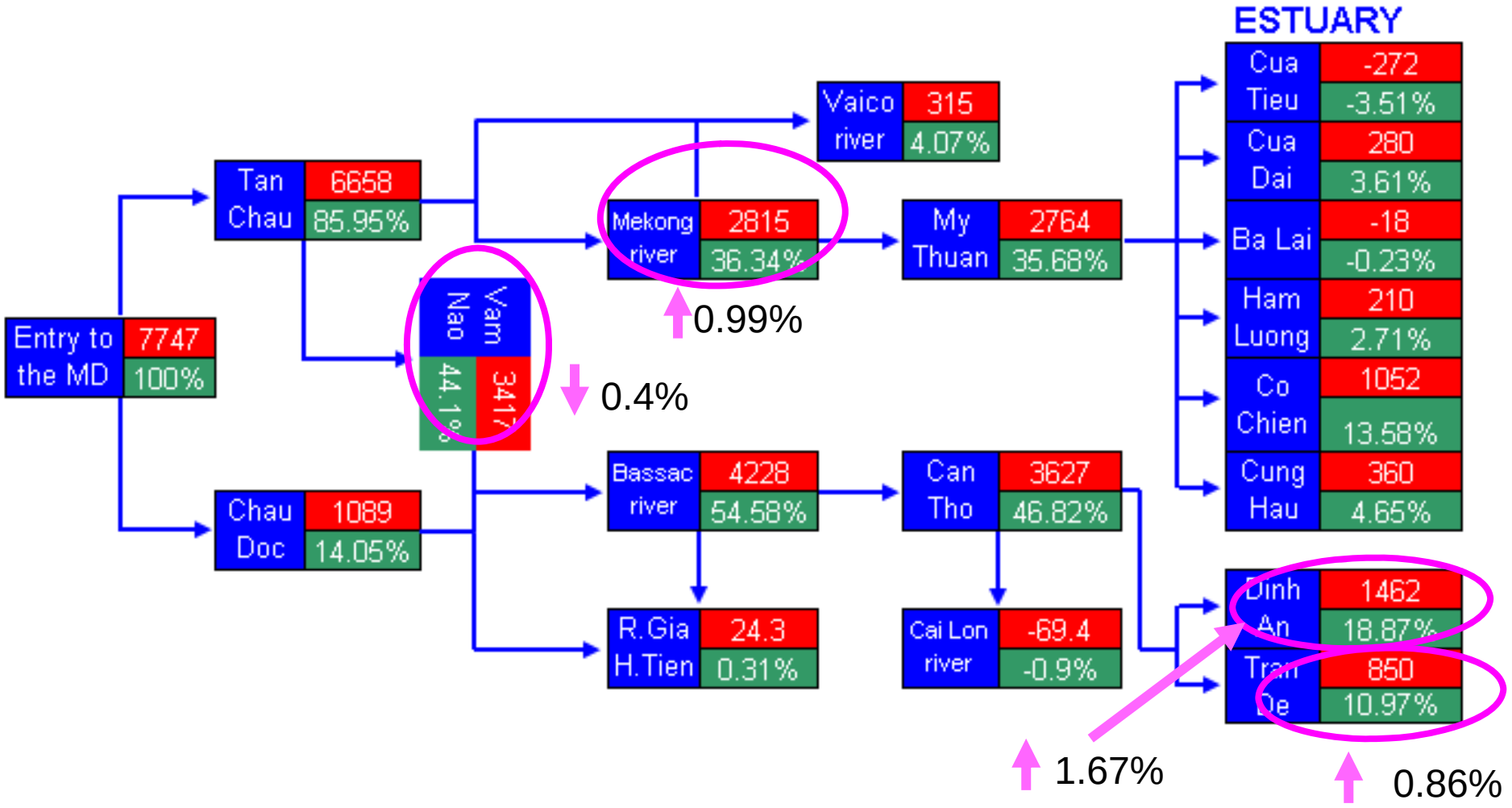
COMBINED 1D & 2D

The 2D-hydraulic network
set for the entire Bay of Rach Gia
The network is divided into 5493 irregular triangular elements
and 2864 computation points

At the Rach Gia Bay area, the boundaries are getting from the 2D model for the entire East Sea.

Besides, the boundaries inside the project area are calculated from the ability of water supply and drainage in the fields

Water distribution

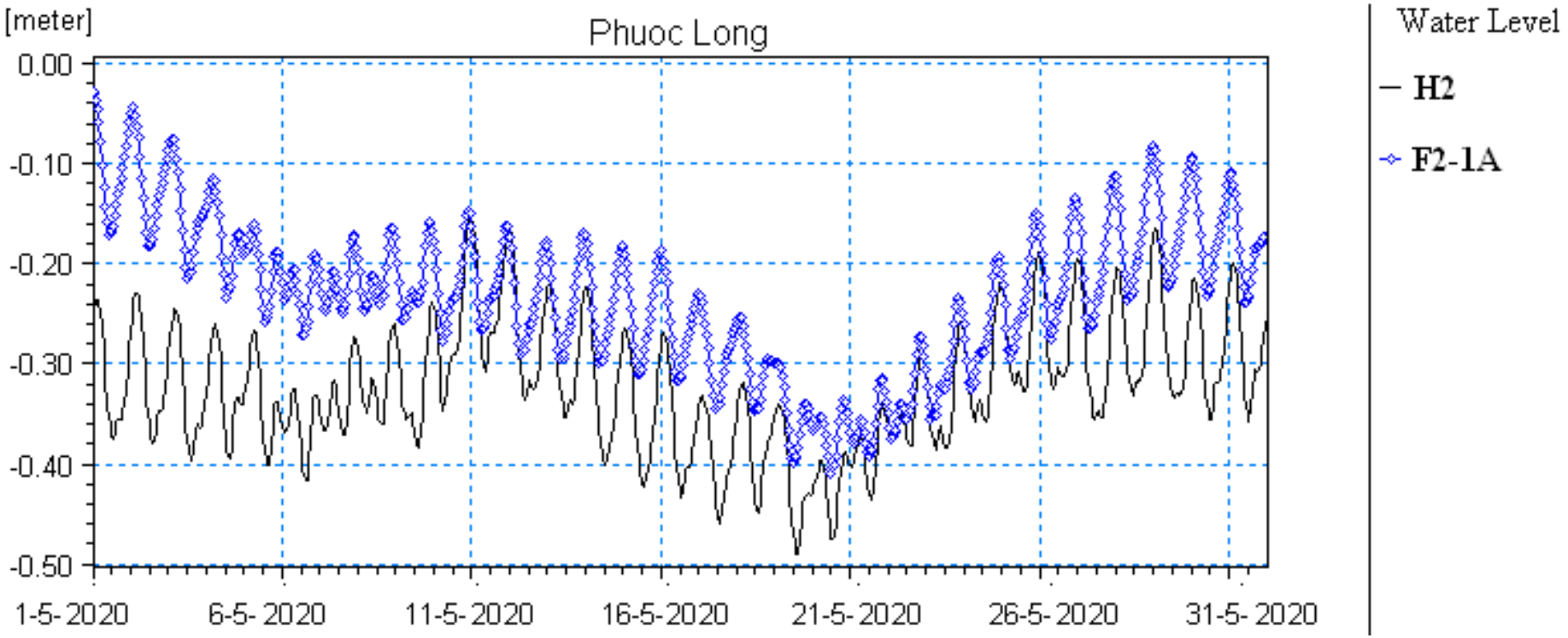


(water demand in 2020, closed sluice gates)

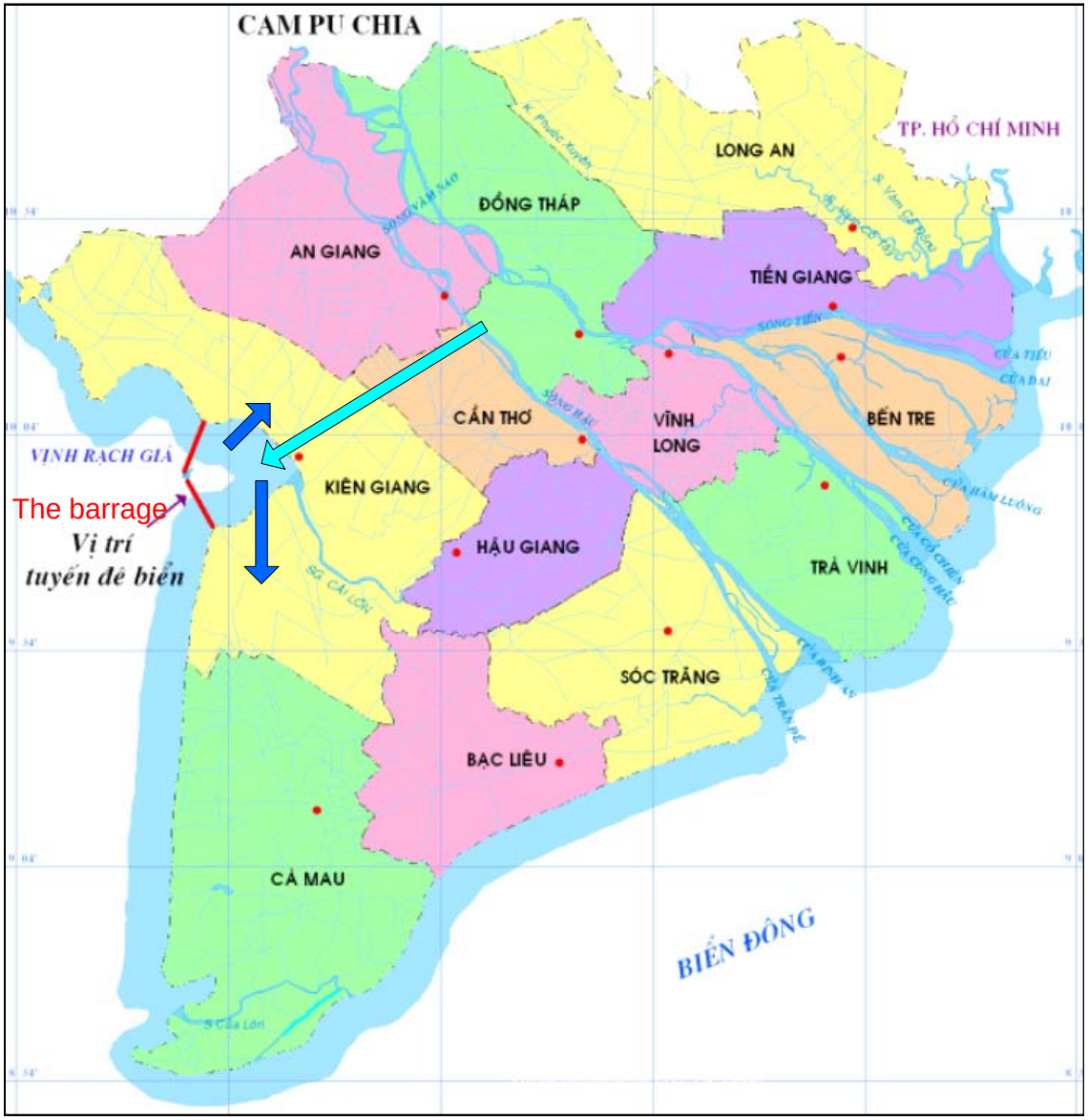
The minimum water level is increasing in the whole region

At the Bay area, water level increases up to 38 cm

The average monthly water level is increasing up to 12 cm



at Phuoc Long - Quan Lo canal (CMP) it is more than 10cm



prevent water flow into the West Sea:

245 Million m3/month

has retained and supplied back to the Delta

LXQ

-Demand: 200 M m3

- Supply: 240 M m3

enough water to supply to for 6 months in the dry season

CMP

– demand 1,400 M m3/month

- supply: 97 m3/month = 7% irrigated to over 50,000 ha of summer-autum rice crop

The water level at the peninsula canals is also increased over 10 cm.
This is a pretty big impact while the current water level is very low here.

Supporting tourism

200 km coastal line and many islands

International and regional routes

Airline: From National and International Airports to Rach Gia Airport, Phu Quoc Airport and Duong To International Airport

Land line:

- From Cambodia to Kien Giang
- From HCMC, Can Tho, Hai Phong, Hue, Da Nang, Nha Trang, Da Lat and others

Waterway:

- Kien Giang – Cambodia
- Kien Giang – other areas

POSSIBLE TYPES OF TOURISM

- **COMMUNITIES TOURISM**
- **ECO-TOURISM**
- **SEA – ISLANDS TOURISM**

TOTAL VALUES THAT TOURISM CONTRIBUTE TO THE GDP:

DIRECT CONTRIBUTION +
INDIRECT CONTRIBUTION +
ARISING CONTRIBUTION

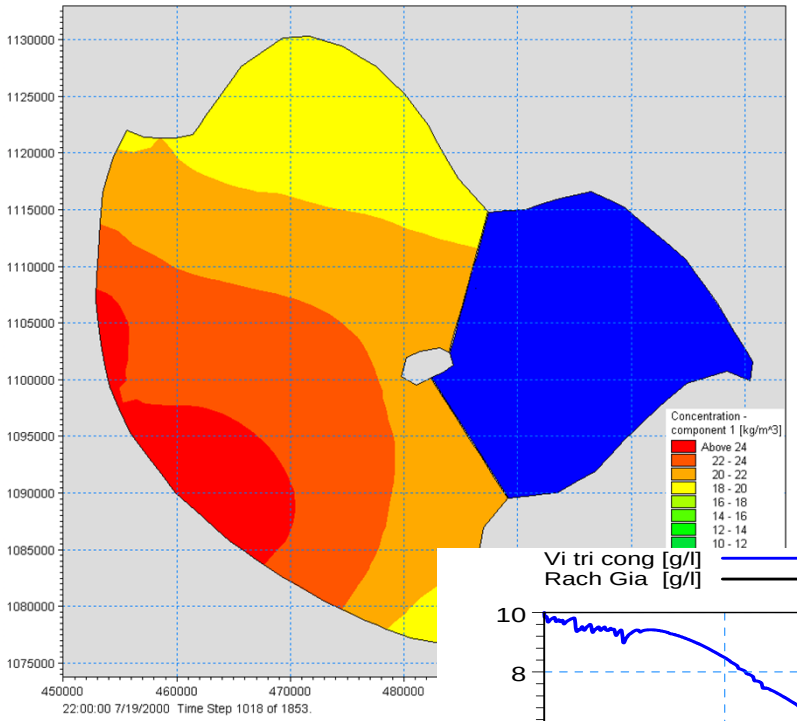
- Total guests in 2020: about 10 million

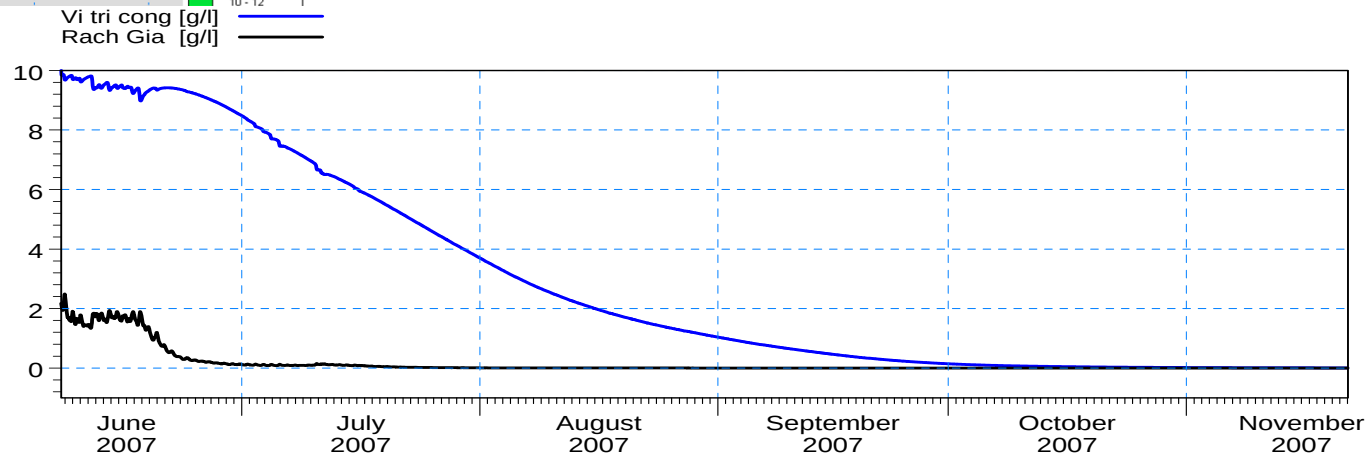
- When the dike is built to connect tourist sites, if the guests stay one more day in Kien Giang, the turnover from tourism will increase about 20 – 25%

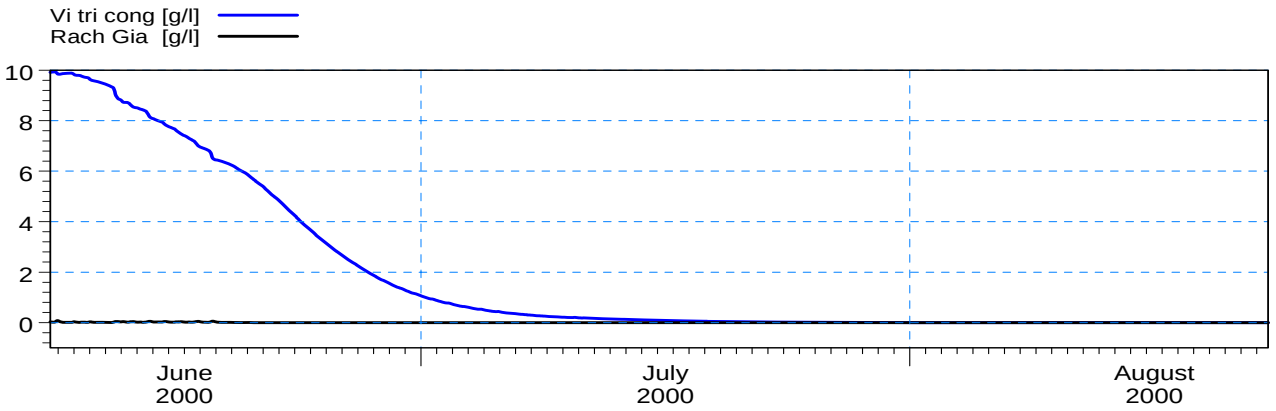
DEVELOPMENT OF TOURISM WILL SUPPORT COASTAL PEOPLE WHO DIRECT OR INDIRECT EFFECTED BY THE SUPER SEA DIKE

FRESHEN POSSIBILITY

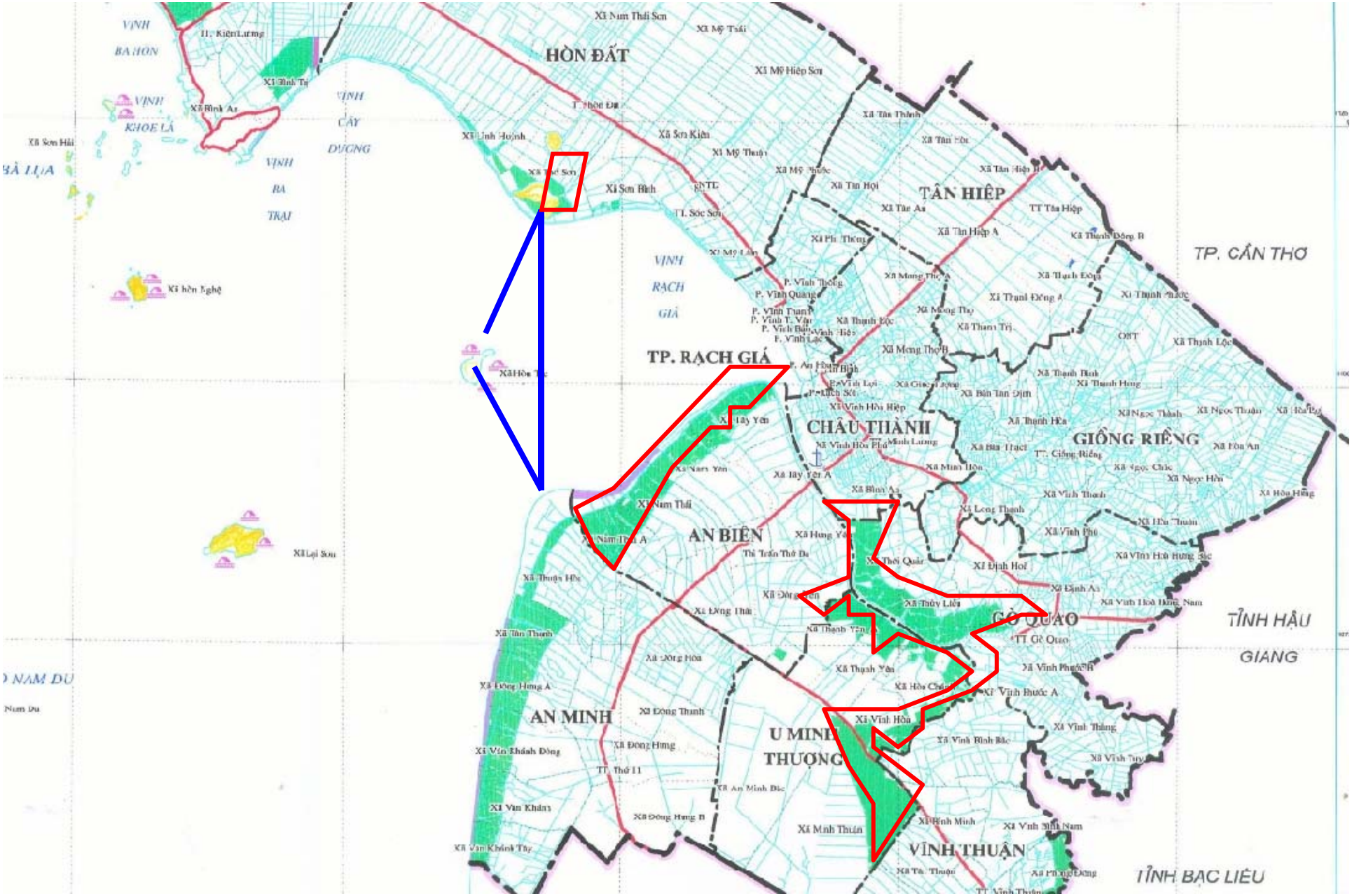
OP1&2: 5-7 months
OP3: 8-9 months (small flood)



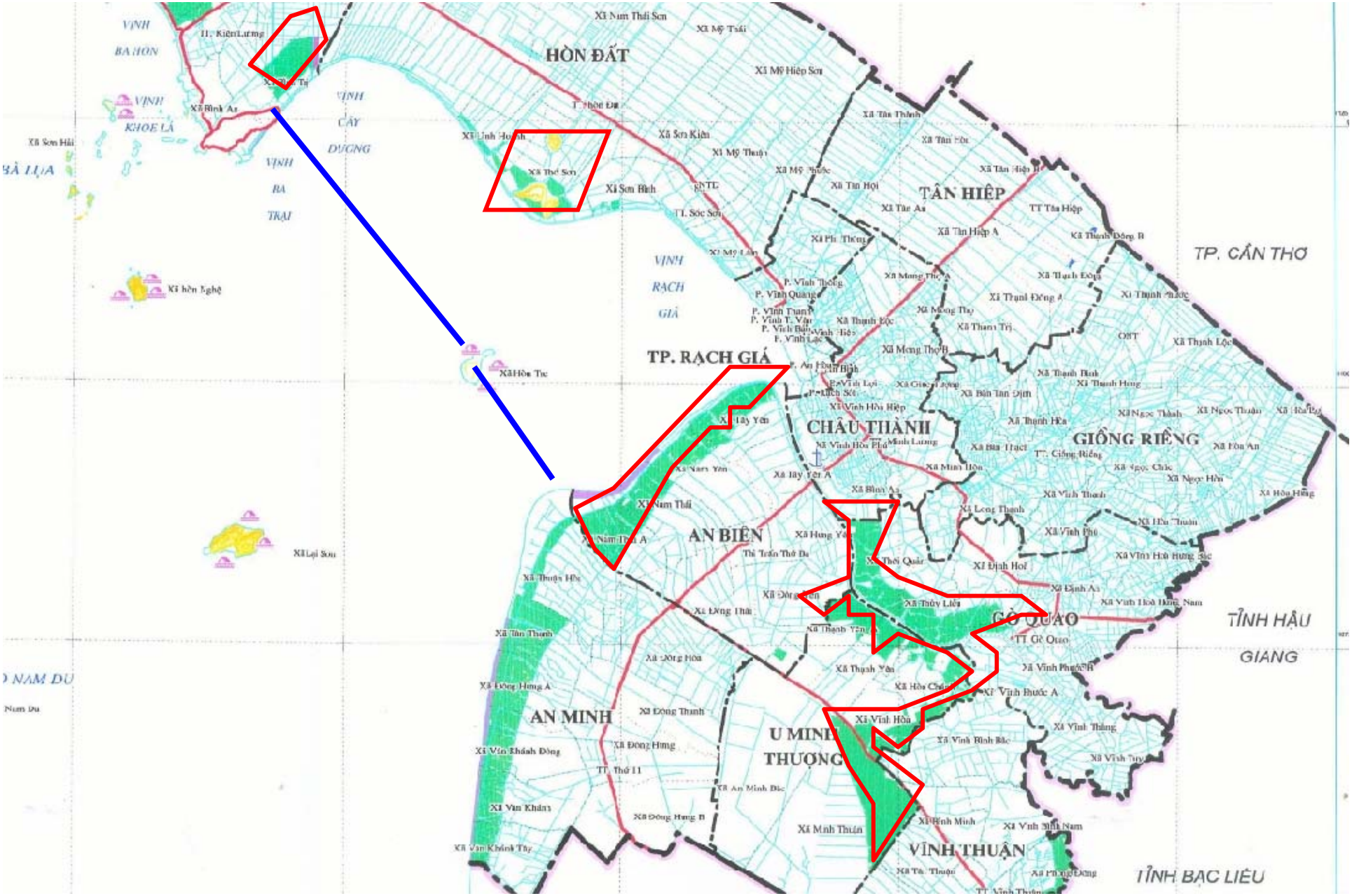




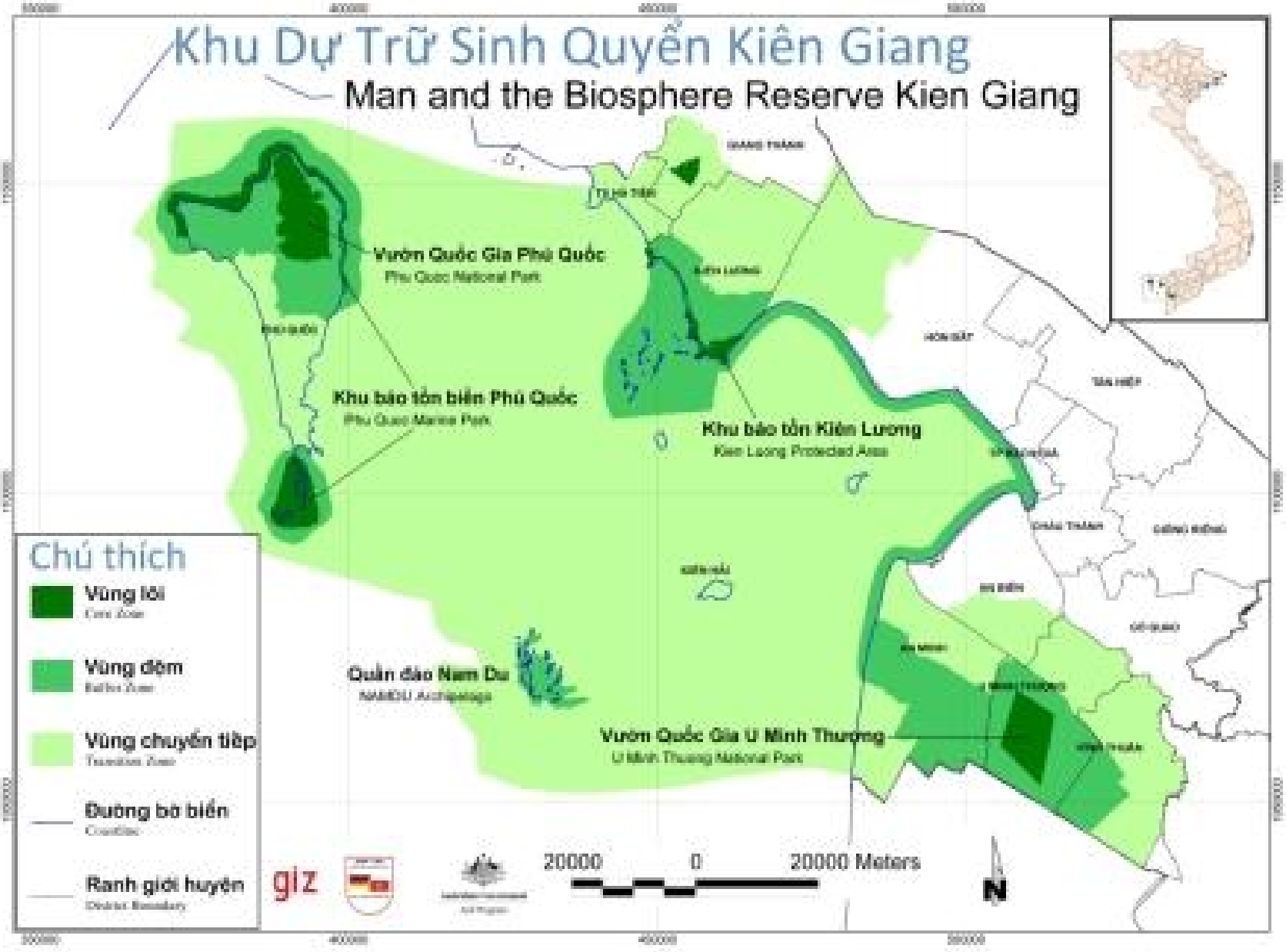
AQUACULTURE AREAS AFFECTED (OP1 & OP2)



AQUACULTURE AREAS AFFECTED (OP3)




LOST OF
MANGROVE FOREST


Khu Dự Trữ Sinh Quyển Kiên Giang
Man and the Biosphere Reserve Kien Giang
Vườn Quốc Gia Phú Quốc
Phu Quoc National Park
Khu bảo tồn biển Phú Quốc
Phu Quoc Marine Park
Khu bảo tồn Kiên Lương
Kien Luong Protected Area
Quần đảo Nam Du
NAMDU Archipelago
Vườn Quốc Gia U Minh Thượng
U Minh Thuong National Park
Chú thích
Vùng lõi
Core Zone
Vùng đệm
Buffer Zone
Vùng chuyển tiếp
Transition Zone
Đường bờ biển
Coastline
Ranh giới huyện
District Boundary
giz
20000 0 20000 Meters
N

CONTRIBUTE TO MEET THE LABOUR REQUIREMENT FOR TOURISM

Target	2015	2020	2030
Total labour (person)	11,300	18,400	31,000
Direct labour (person)	3,500	5,800	9,300
Indirect labour (person)	7,800	12,600	21,700

- **On socio-economic point of view, tourism is always a sector of long live and sustainable.**
- **Tourism development will create jobs to coastal people, especially who cannot earn their leaving by depending on mongrove forest and aquaculture**
- **Increasing turnover of tourism**
- **Bring benefit to the poor due to “series of services”**
- **Exploiting huge and unending Tourism natural resources of the coastal areas**


THANK YOU VERY MUCH
FOR YOUR ATTENTION
20c