CAN THO URBAN DEVELOPMENT AND RESILIENCE PROJECT
WATER LEVEL RAISE IN CAN THO DURING LAST 40 YEARS
Land subsidence – a threat that requires further study

The Dutch Mekong Delta Plan identified land subsidence as a key challenge, caused by sustained, long-term drainage and groundwater extraction is occurring in the region.

Can Tho authorities strongly believe that land subsidence is also threatening their city and, combined with sea-level rise, could lead to worsened seasonal flooding.

The relationship among water supply, groundwater extraction, land subsidence, and flood protection is not well understood in Can Tho.

Linear average ground displacement rate estimated (Jul 2007 – Jan 2011)

- NASA JPL analysis of subsidence
- Ground surface displacement measured with observations derived from radar data from Japanese ALOS-1 satellite
- Red: uplift / Blue: subsidence: identifying subsidence as a key issue in the urban core and elsewhere.

FLOODING IN 1980
(FROM HYDRAULIC MODELLING)

FLOODING IN 2011
(FROM HYDRAULIC MODELLING)
FLOODING SITUATION IN CAN THO CITY

- Flooding in rain season (from July to November), many areas are flooded from 0.3m – 1.0m,
  - 2000: 76% flooded area, mainly agricultural land (0.25 m – 1.5m)
  - 2011: 88% flooded area, including urban (20 – 50 cm)
  - Urban: 2000/2765 flooded hectare (69%), 436,000 affected people
  - Flooding over 200 000 houses, 1234 schools, 4000 km traffic road in rural, 116 000 ha rice – crop and garden,
- Flooding in urban (>= 0.3 m for 30 minutes)
  - 10/2002: some road lines are flooded
  - 10/2007: 20 points
  - 10/2011: 56 points
  - 10/2012: 56 points
  - 10/2013: 59 points
  - 10/2014: 47 points

Project’s components:

- **Comp. 1:** Flood risk management and environmental sanitation,
- **Comp. 2:** Urban corridor development,
- **Comp. 3:** Spatial planning platform and financial and social protection instruments.
Comp. 1: Flood risk management and environmental sanitation

1. Can Tho River embankment,
2. Cai Son-Muong Khai canal embankment,
3. Road CMT8-PR918 (dual purposes),
4. Rehabilitation of 14 inner canals (15/20 km)
5. Tidal gate/locks.
6. Flooding PS,
7. Retention ponds (additional 2 ponds)
8. Subsidence Monitoring System

Soft ecological embankment (lakes and small canals)
**Comp. 2: Urban corridor development,**

1. Quang Trung Bridge – Module 2.
2. Tran Hoang Na Road & Bridge and parallel road.
3. Connecting road between CMT8 Road to 918 Provincial Road,

![Example of Road link CMT8-DT918](image)

**Comp. 3: Spatial planning platform and financial and social protection instruments**

1. Management and operation of the city’s general flood risk management system,
2. Spatial planning bases,
3. Financial and social protection tools:
   a. Disaster Responsive Safety net establishment,
   b. Social Assistant System

**Climate Change**

![Climate Change](image)
Technology Infrastructure

A single point for user level applications to access spatial data held by many government agencies

- Data Access System
  - Catalogue searching
  - Viewing and download
  - E-commerce
  - Data Security

Images courtesy Landgate
Conclusions

1. An effective approach to adapt to climate change is for a City to invest in infrastructure with risk based approach the incorporates multiple sectors

2. Geospatial visualization of risk is critical to understand and manage the risk

3. In light of uncertainty related to sea level rise, storm surge, and subsidence, flexible solutions that can be adjusted/elevated over time

4. A combination of hard infrastructure and green solutions is often the most cost effective and efficient

5. Multi-use infrastructure can save significant financial resources

6. Protecting a small core urban area will promote densification, which will improve public transport and reduce water displacement

7. It is important to find solutions for those outside of the protected area, such as scalable safety nets for recovery assistance