

Flood defences

CTB3300WCx: Introduction to Water and Climate

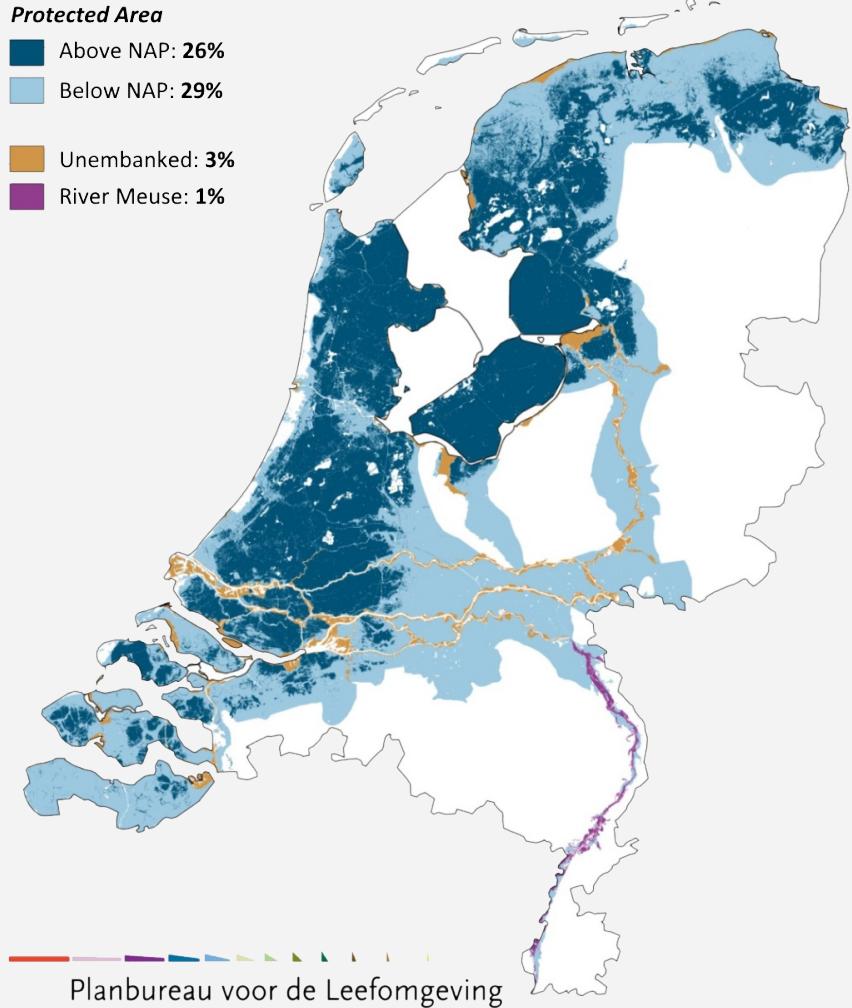
K. Lendering, M.Z. Voorendt, S.N. Jonkman, Faculty of Civil Engineering and Geosciences



Challenge the future

The Netherlands

- *60% of the area is prone to flooding*



Flood defences



Barriers

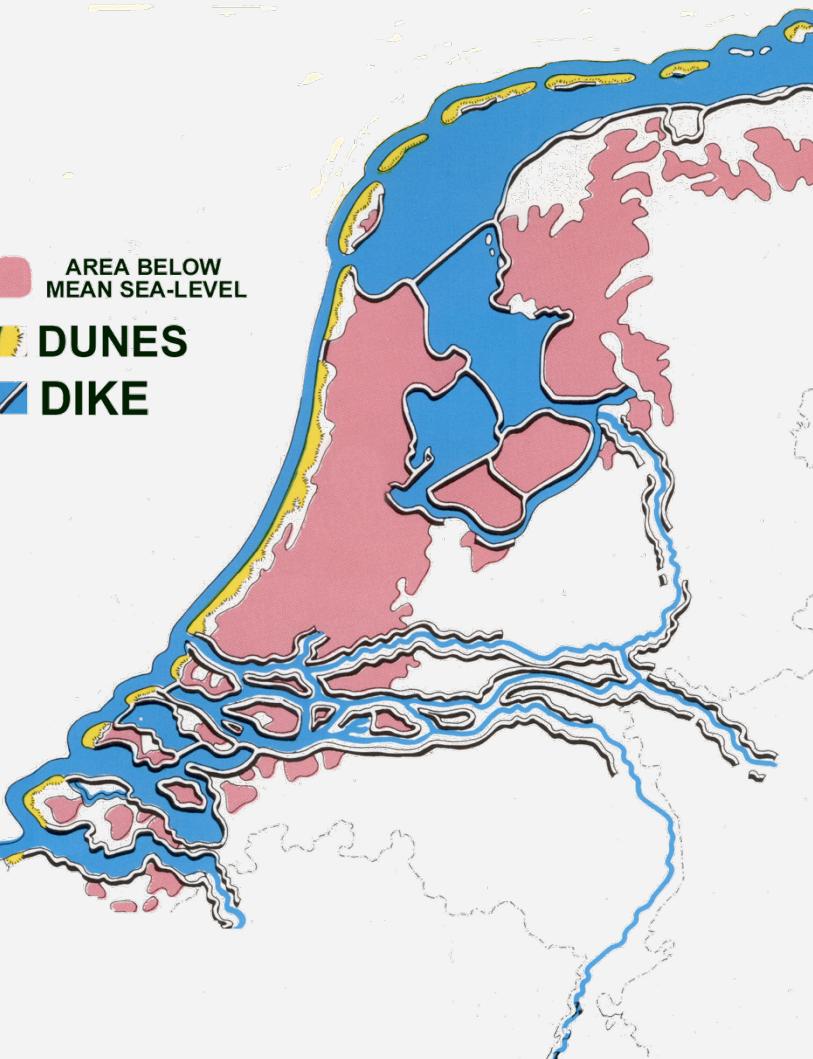


River dikes



Dunes

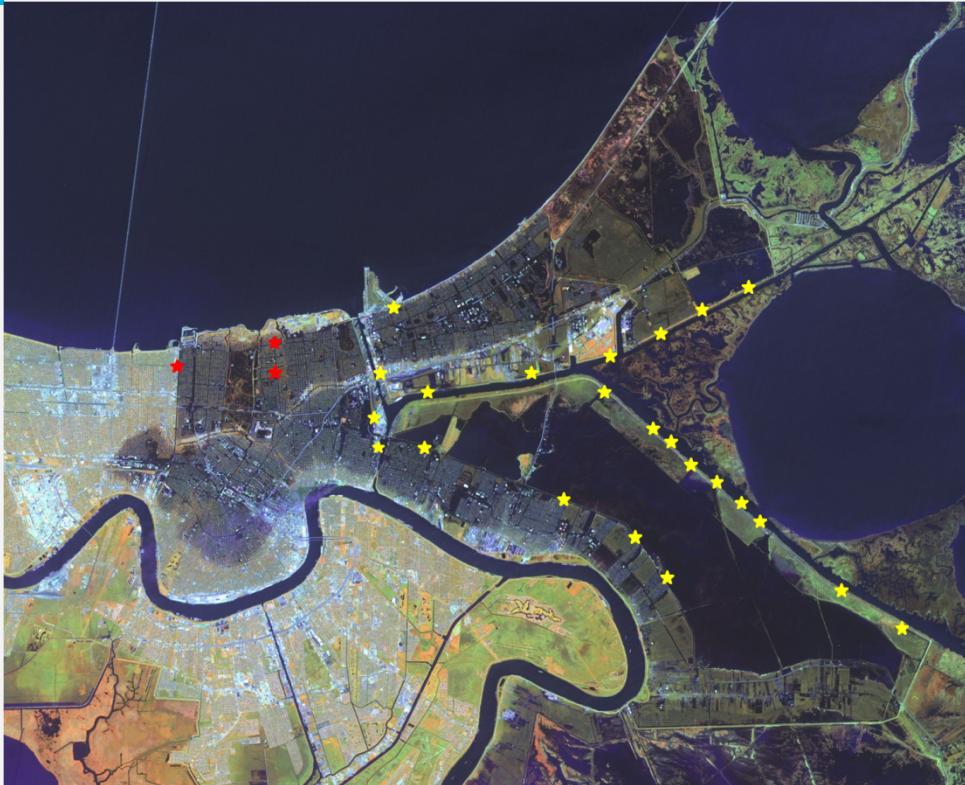
- AREA BELOW MEAN SEA-LEVEL
- DUNES
- DIKE



Main failure mechanisms of flood defences

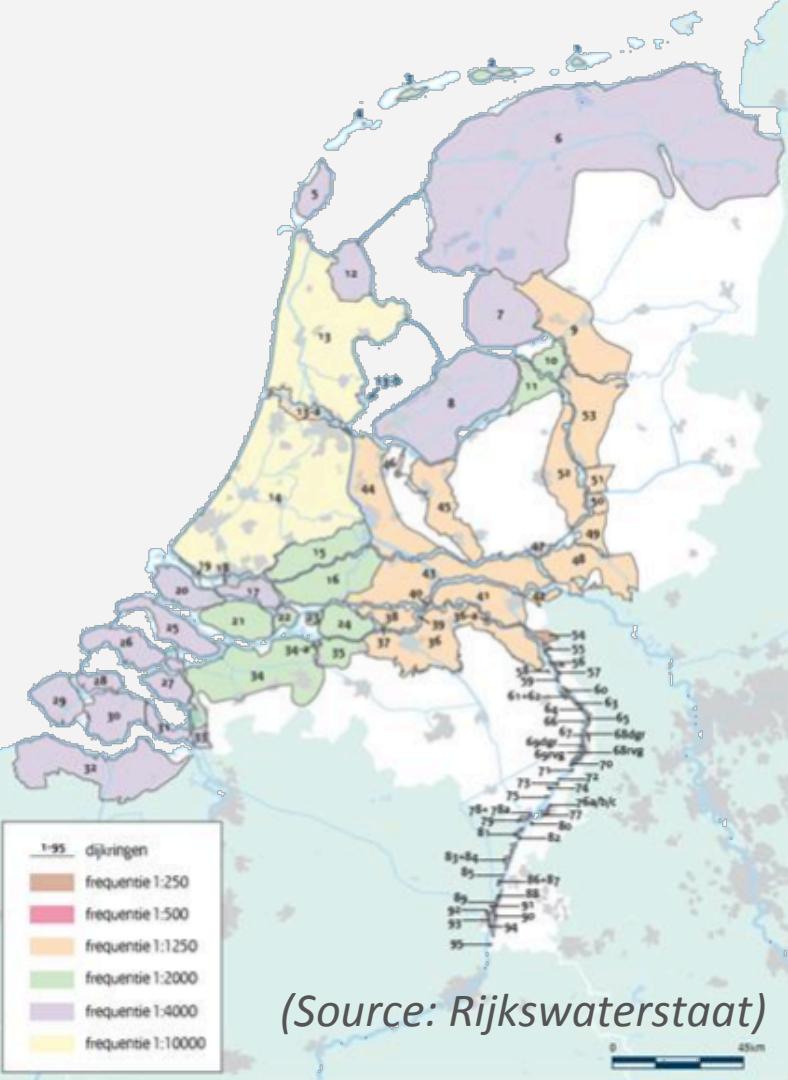


Failures in New Orleans (2005)



Safety standards

- Almost 3800km of primary flood defences
- Legally prescribed safety standards Water Law (2009)
- Safety standards per dike ring area
- Enforcement of safety assessment every 12 years
- New safety standards, later 2014



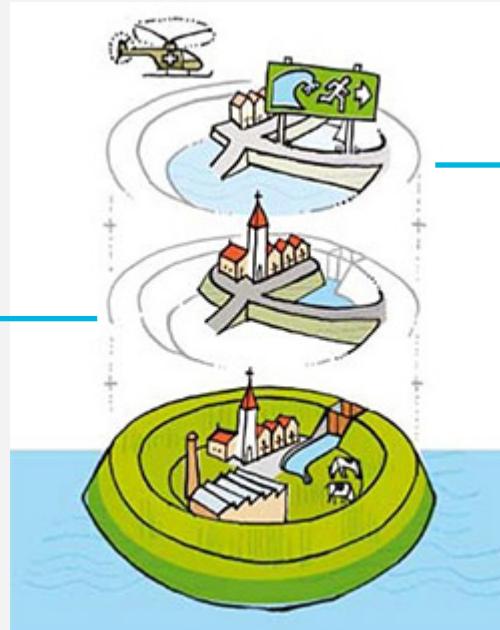
1953 Flood in the Netherlands

(1835 casualties)



Source: De Ramp

Measures to reduce flood risks



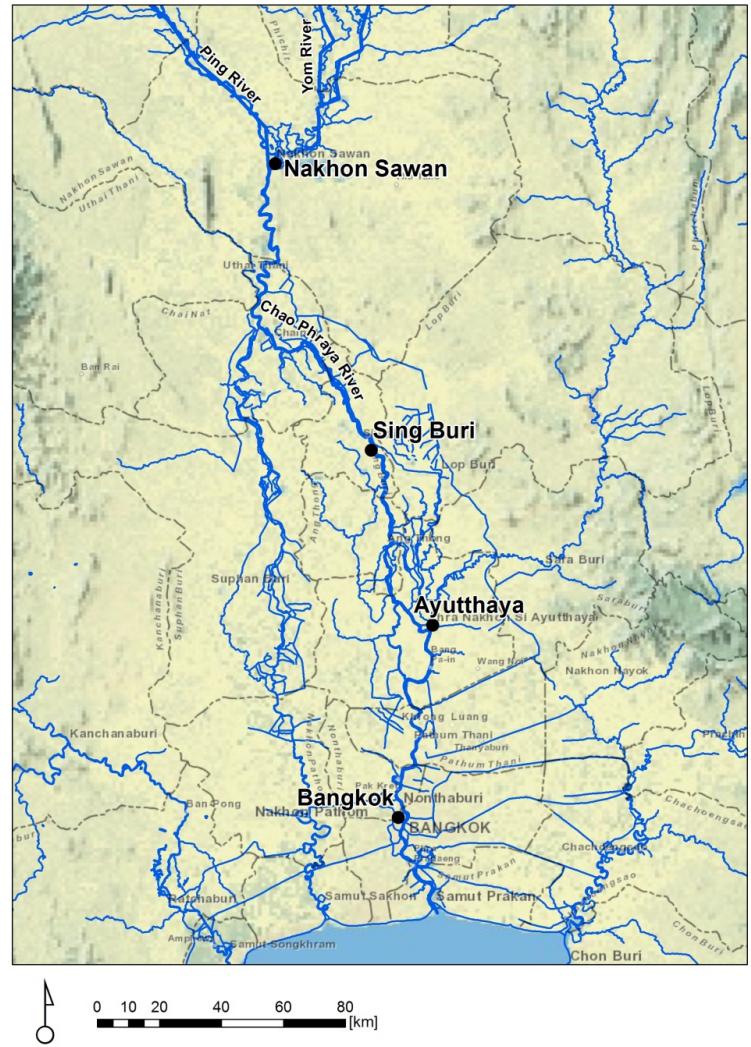
Elevated house in New Orleans

Evacuation and emergency management

Lower Chao Phraya Basin



(Source: Wikipedia)

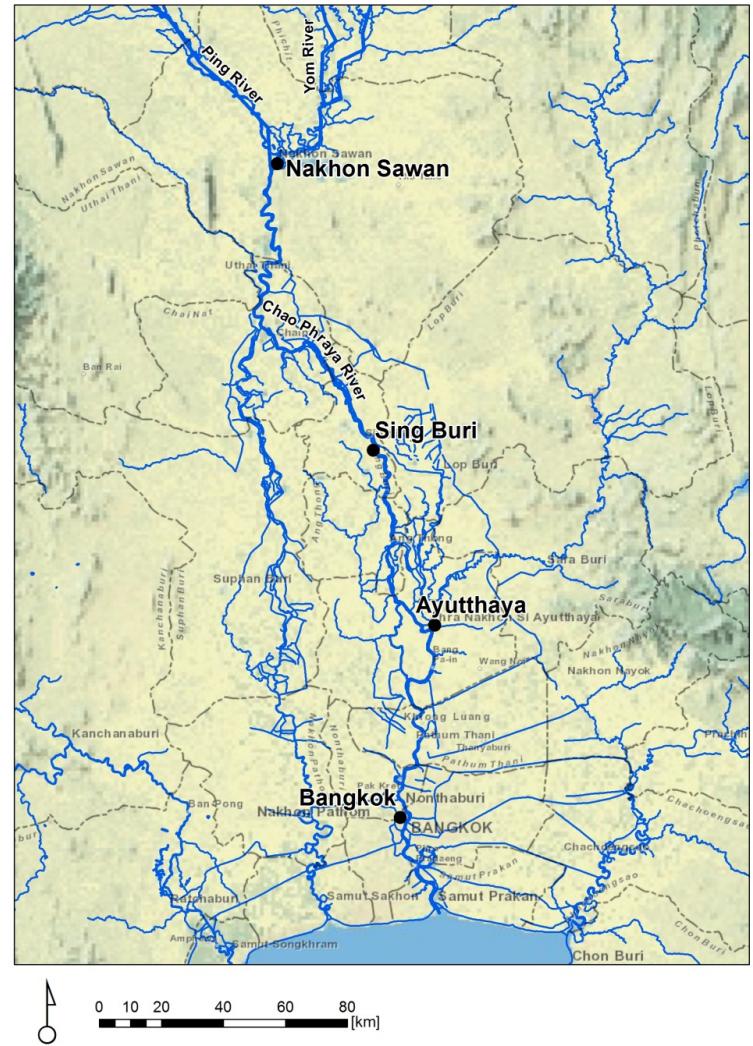


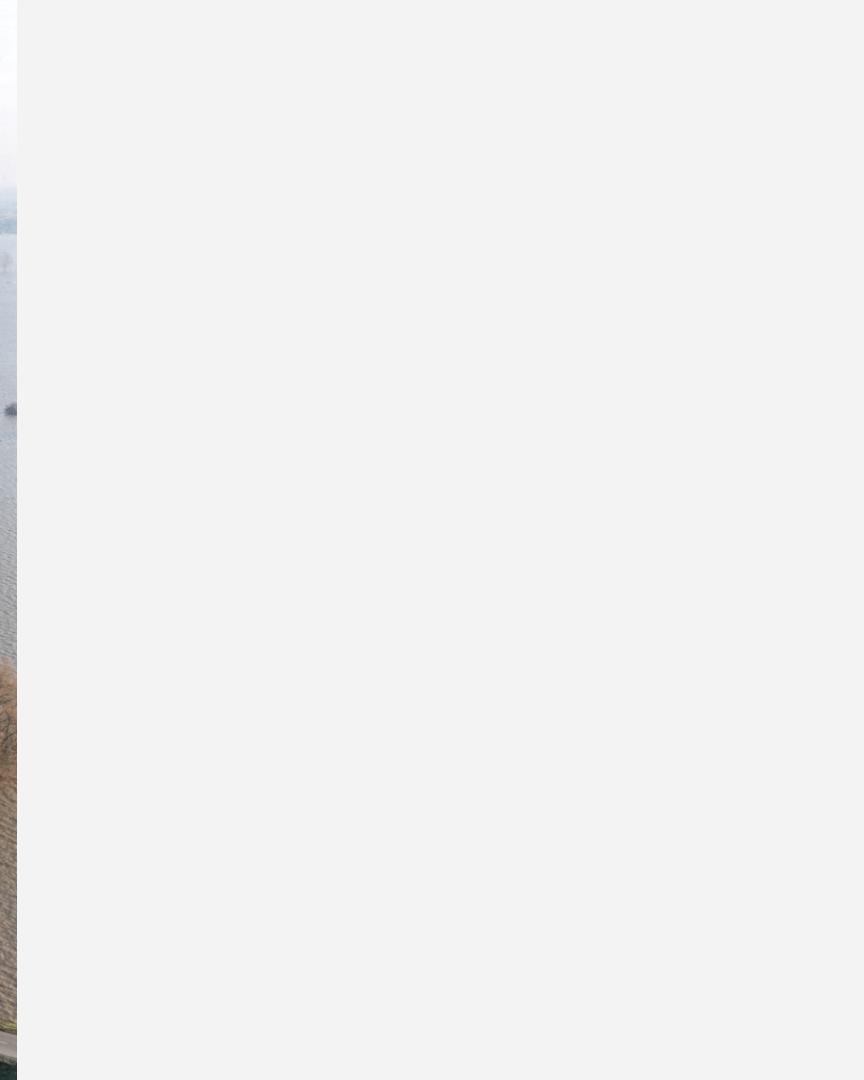
Lower Chao Phraya Basin

Floodwalls



Elevated houses





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Challenge the future

1935 Floods and the Delta Plan

*After flooding of 1953:
A new start with the Deltaplan:*

- Closing of estuaries with dams and storm surge barriers (shortening coastline 700 km)
- Safety standards for the whole country, based on economics
- National dike improvement scheme

