



Sea Level Rise: consequences for the port of Rotterdam and the greater Rotterdam area

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Content

- The Netherlands, the Delta of NW Europa
- The Delta Program and the MLS approach
- Sea Level Rise and the National Research Program
- Consequences of SLR and choices in our strategy...



The Netherlands, the delta of NW Europe

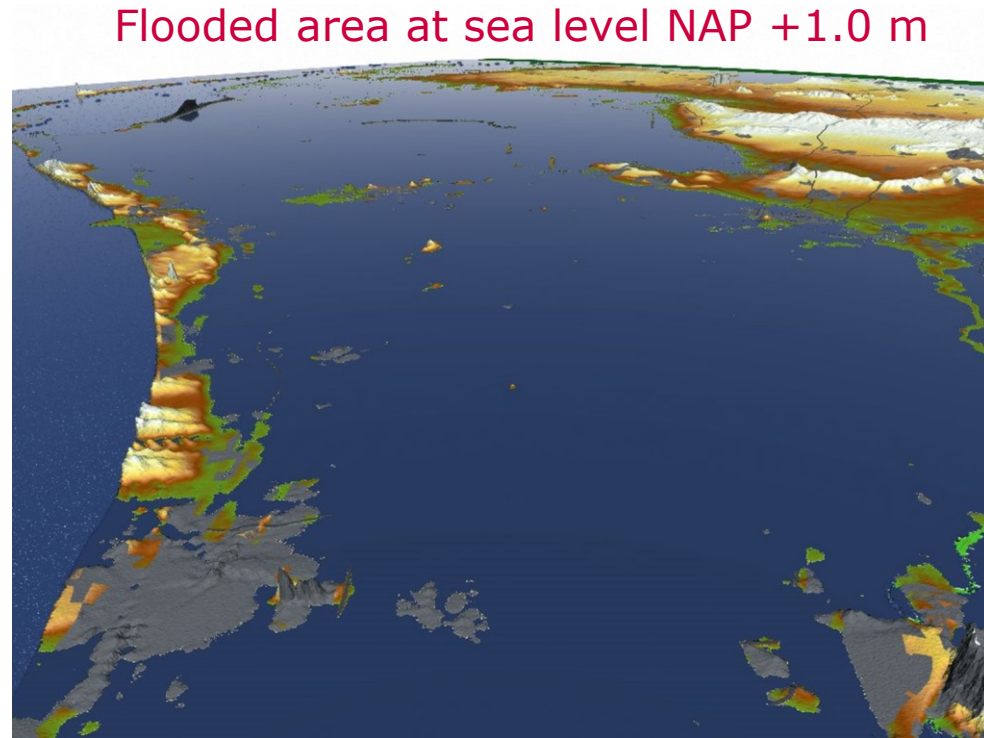
**Delta of Rhine, Meuse,
Schelde, Eems**



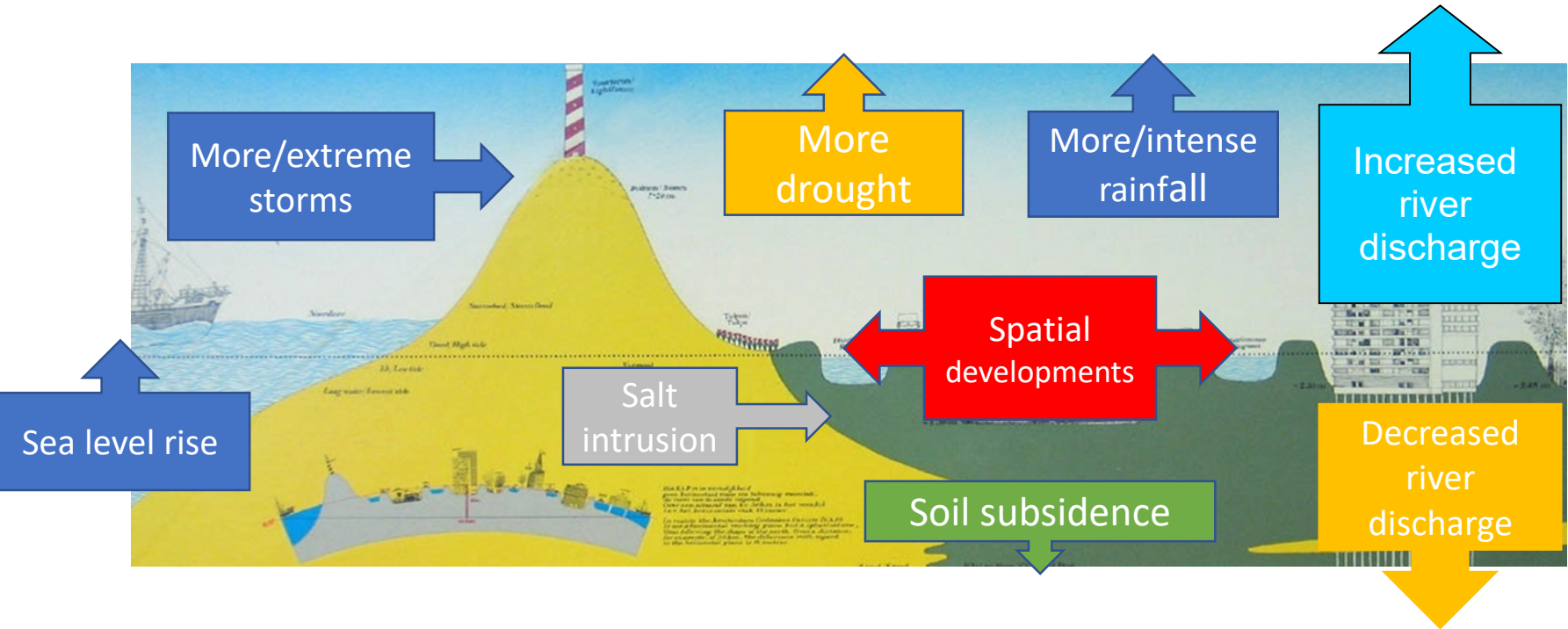
People and value behind the dikes

60 % vulnerable to flooding

- 9 million people
- €540 billion = 2/3 of GDP
- Influence of the sea
- Influence of the rivers
- Rotterdam area: influence of both (and rainfall, groundwater)



The delta under pressure



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The Delta Program

- 1916
floods -> Afsluitdijk
- 1953
floods -> Delta Works
- 1993 & 1995
very high river discharges
-> Room for the River



New aim: staying ahead of a disaster !

Multi Layer Safety Approach

- Prevention

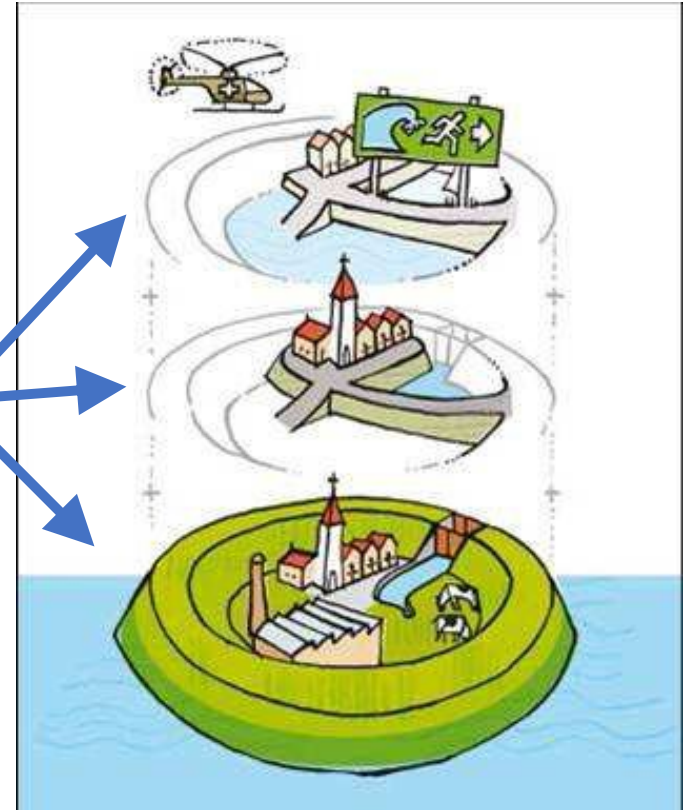
*Limit the risk of a flood disaster
(dikes, dunes and storm surge
barriers)*

- Sustainable spatial planning

Limiting the effects of flooding

- Crisis management

*Reducing the consequences of a
flood*



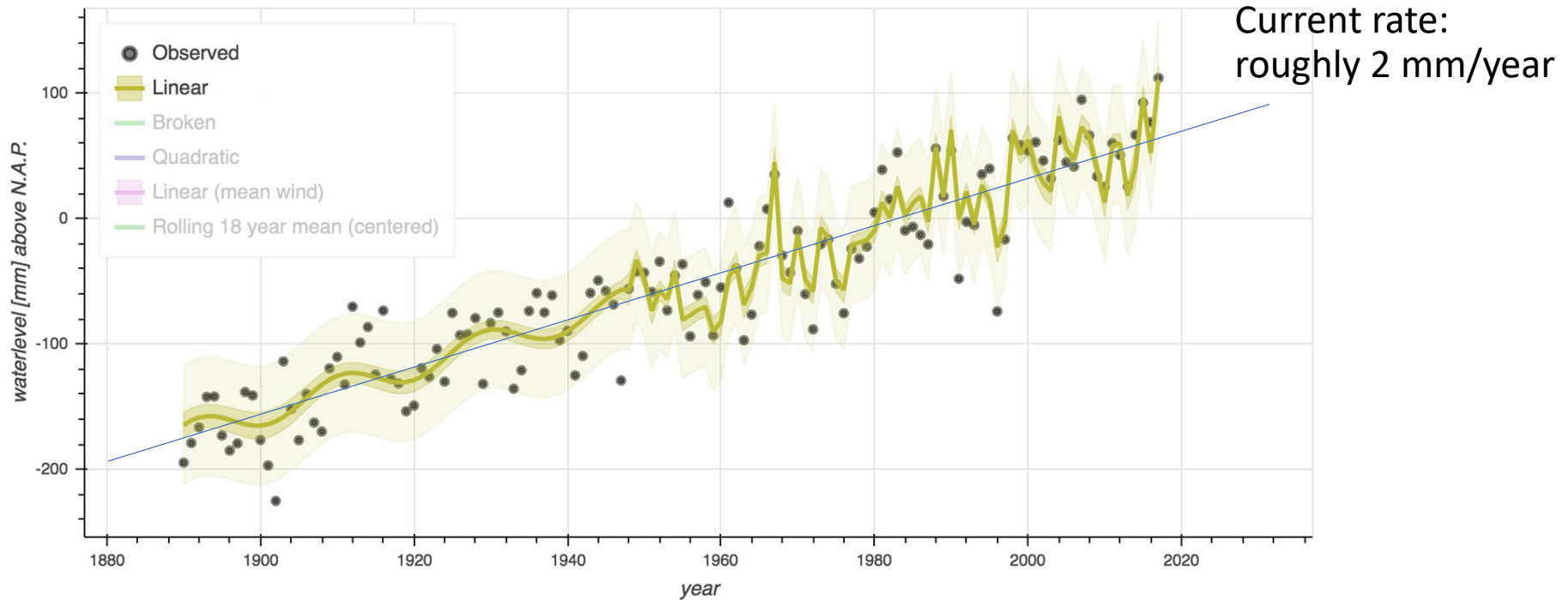
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Current Strategy, open closable Nieuwe Waterweg



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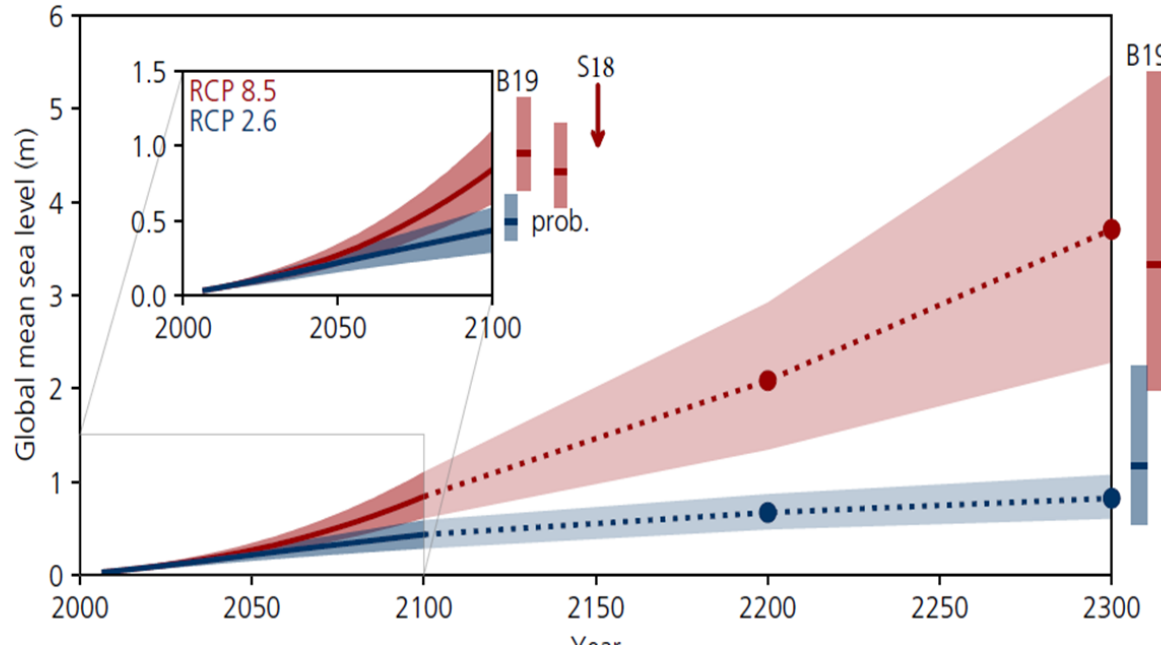
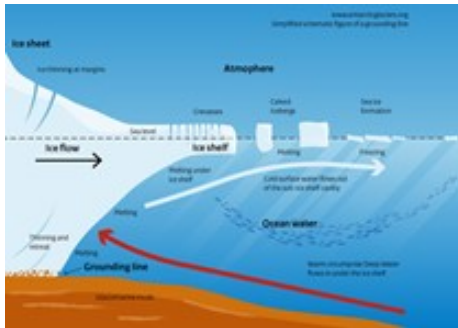
Sea level rise in the past...



...and in the future

Rate will increase, but...

- By how much?
- Global – Dutch coast?
- Antarctic Ice Sheet ?



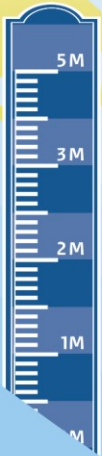
Note: new scenario's available in 2023...



Rijkswaterstaat
*Ministry of Infrastructure
and Water Management*

Sea Level Rise Research Program

DUITSLAND



N E D E R L A N D

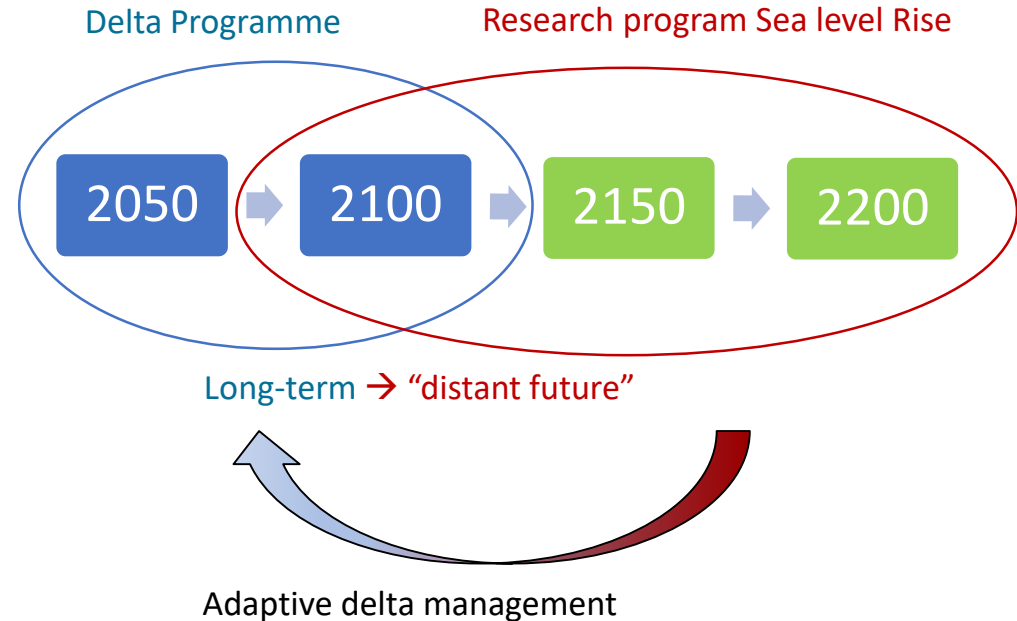
BELGIË

N O O R D Z E E

Five themes

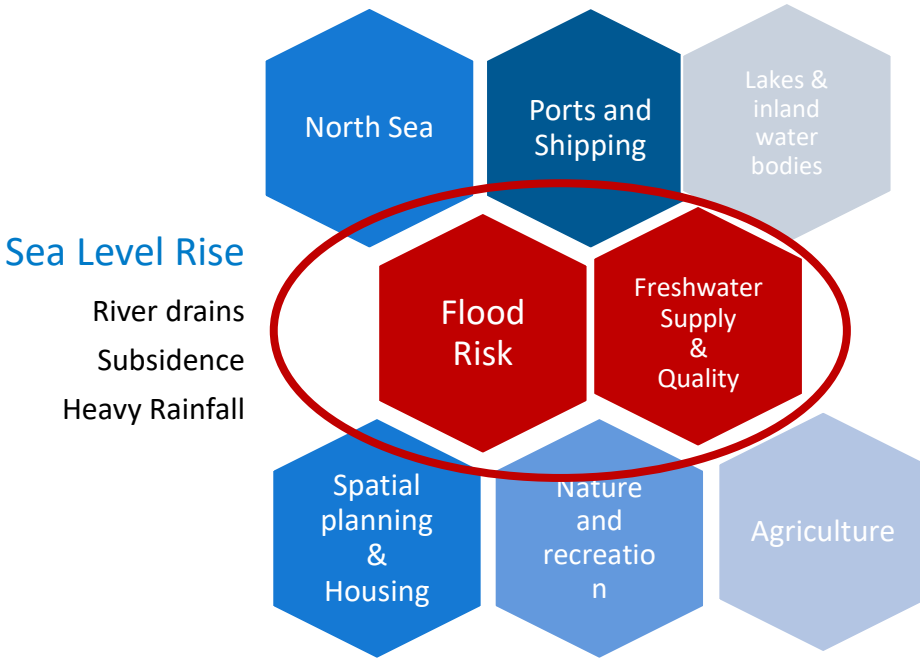
1. What is facing us?
2. What can we handle with our current strategy ?
3. What early signals for a change in rate of SLR do we need to act?
4. What are long-term perspectives and strategies?
5. How to handle (governance)?

Horizon





Scope theme 2

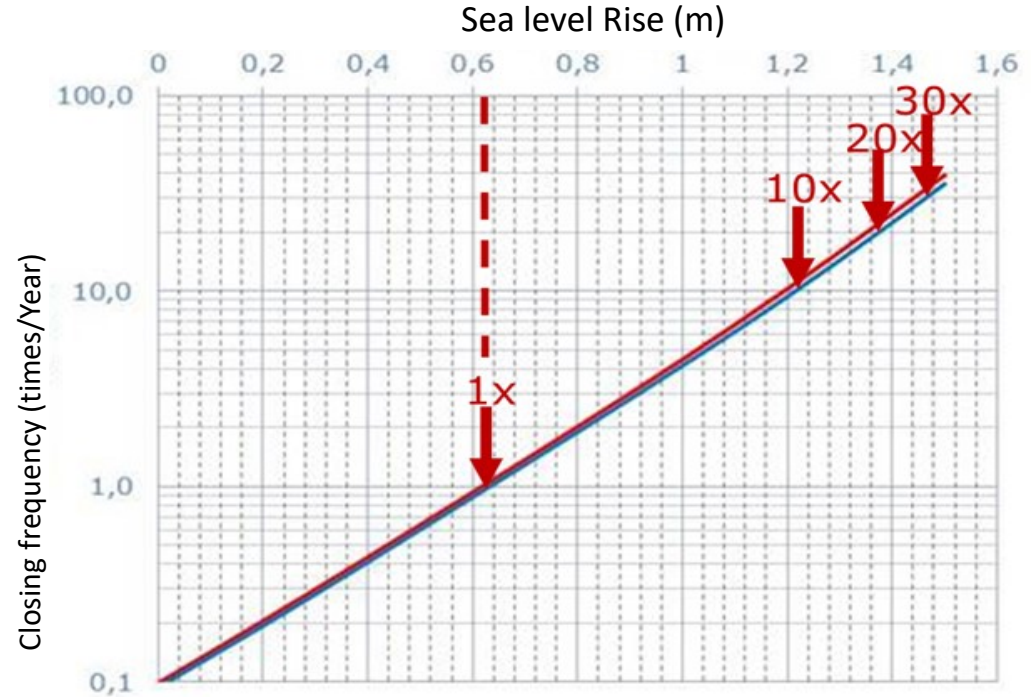


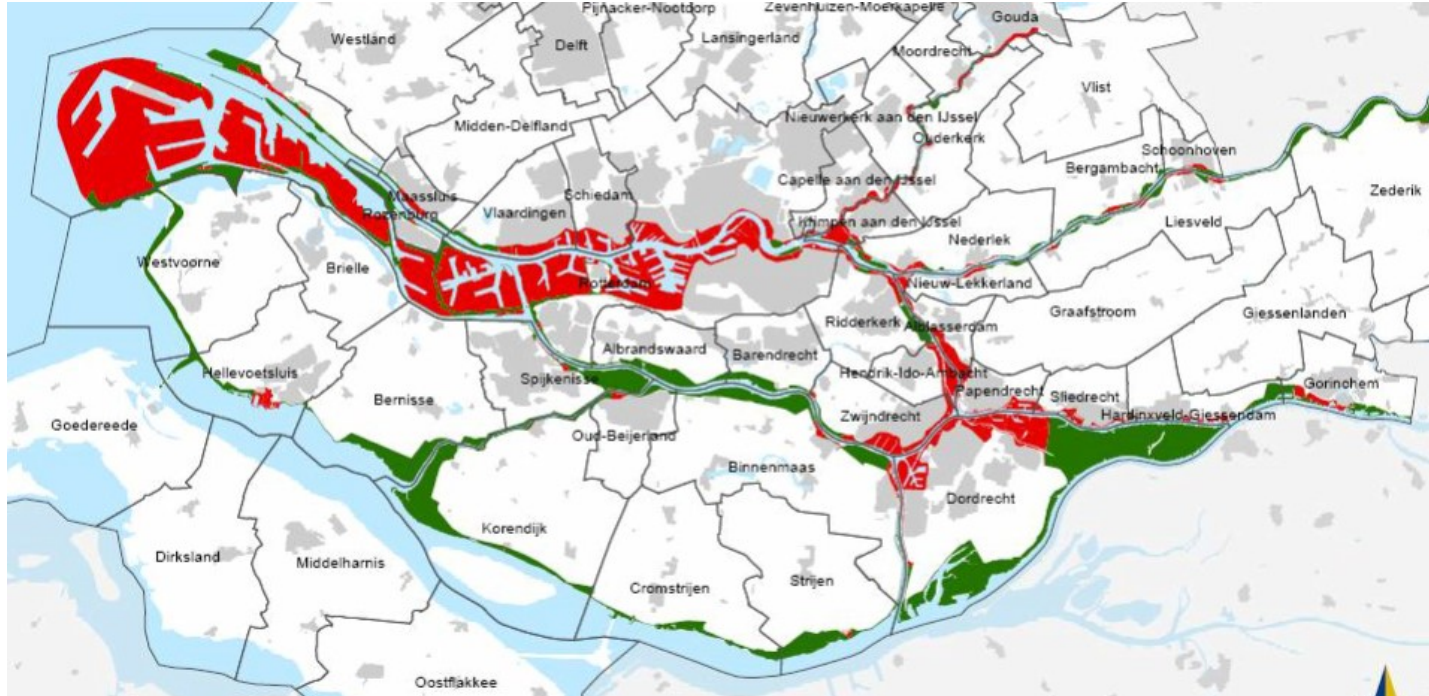
- Determine physical impact of sea level rise on our current flood risk management strategy
- Determine to what point our current strategy is still applicable
- Explore how to 'stretch' our current strategy

Use of different levels of SLR (0,5 up to 5 m) without knowing yet if/when these occur

Consequences:

Effect of SLR on the closing frequency of the Maeslant Barrier

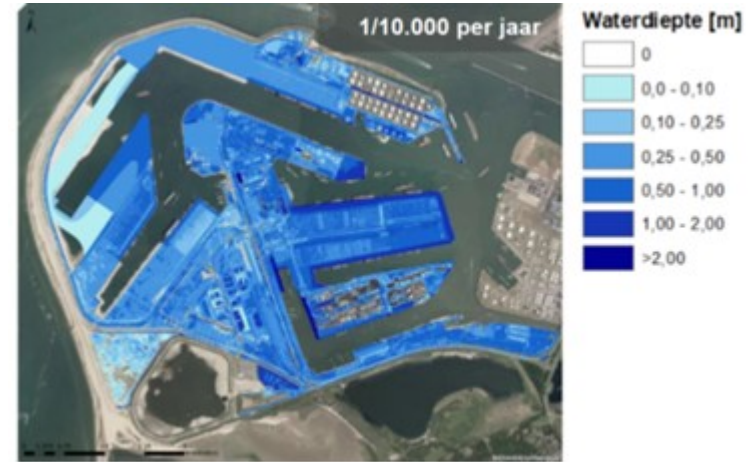




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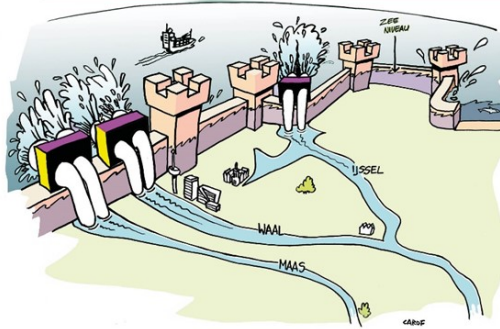
Effect of Sea Level Rise on unembanked area's

- Flood frequency will increase, especially outside the storm surge barriers
- Behind the storm surge barriers, water levels and flood frequencies depend on the closing level, length of the storm and the river discharge

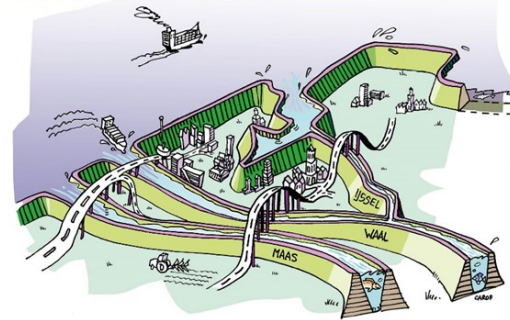


Long term possibilities (theme 4)

Protect-closed



Protect-open



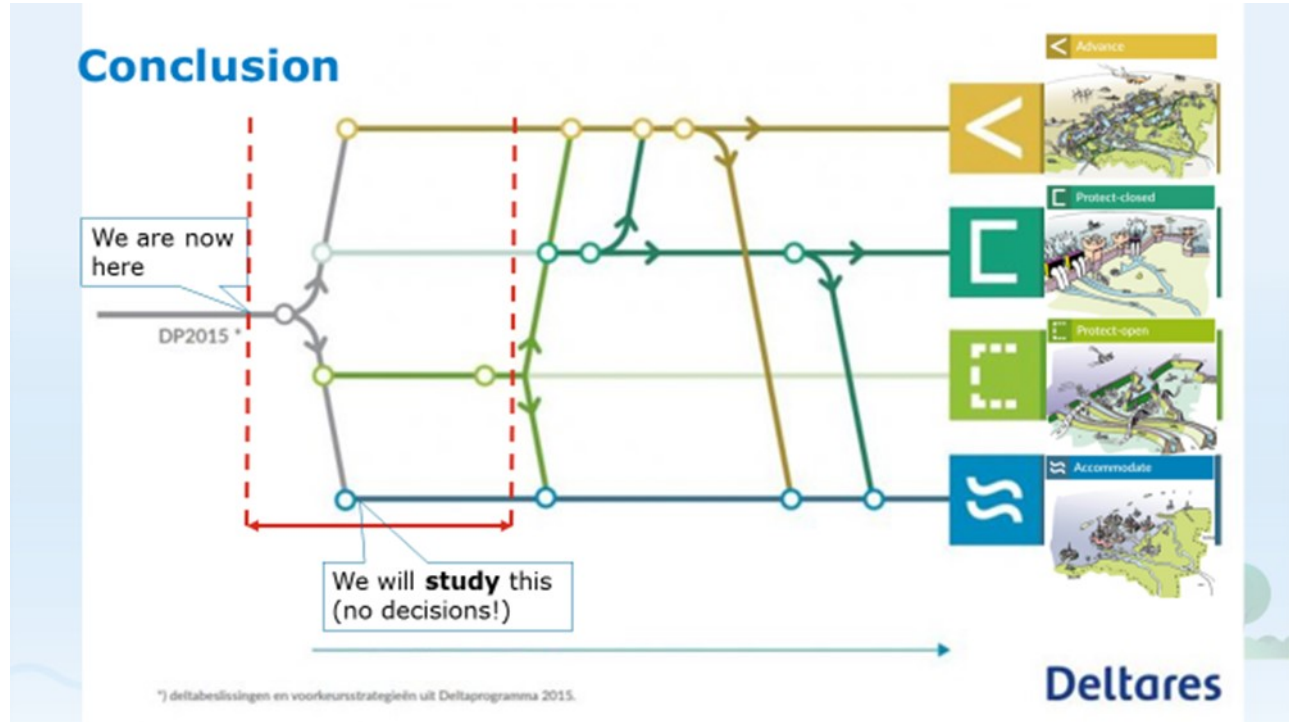
Advance



Accommodate



Adaptive pathways delta-strategies



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Thank you for your attention !

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WWW.DELTAPROGRAMMA.NL