

# Flexible Solutions in Practise

Deltas in Times of Climate Change

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**AT OSBORNE**

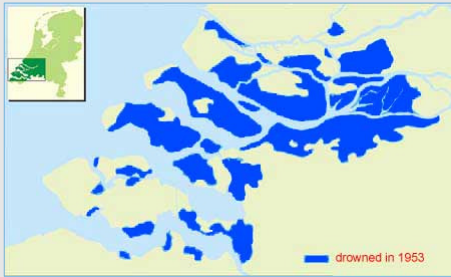
## Storm Flood 1953



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## Delta Works



## Characteristics Delta Works

Started as a Designing Approach:

- 'Grand design'
- Initiated and managed by central government, in cooperation with Province
- Focus on safety

Main works:

- Dams
- Locks
- Storm surge barrier



## Characteristics Delta Works



## Oosterschelde From Dam to Storm Surge Barrier



### Characteristics Process:

- Design evolved
- Not only safety, also environment
- Other actors influenced the decision, e.g. NGO's
- Still: this new solution is very difficult to change

## Two approaches

### Inflexible Solutions

#### Designing Approach

- 'Grand design'
- Rigid
- One actor, hierarchy
- Mono disciplinary
- Devalue
- We know it works!
- Factors of safety
- Optimization

## Two approaches

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### Flexible Solutions

#### Developing (evolving) Approach

- Incremental
- Adaptive
- Multi actor, network
- Multi disciplinary
- Revalue, upgrade
- Living with uncertainty
- Headroom
- Designed in variability

## New urgency emerged

### Extremely high waters mid 90's



*River Maas 1995*

January 1995: 250.000 people evacuated

➤ Major Rivers Delta Plan 1996

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### Global Climate Change



- The sea level is rising.
- More melt and rainwater.
- Also lower-lying areas are slowly sinking, etc.
- Room for the Rivers, 2000

## Two approaches

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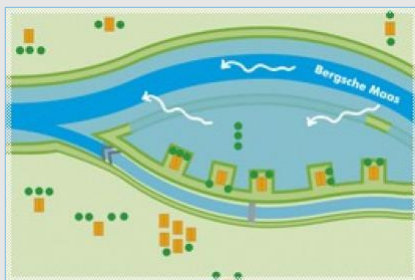
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## Overdiepse Polder



- A polder (550 ha) and a riverside washland (180 ha)
- Use as overspill zone
- Homes and farm building on raising platforms
- Involvement of local residents, in fact initiators of the plan

## Floating homes IJburg, City of Islands



### IJburg:

- New city development, east of Amsterdam.
- Need from lack of available land next to Amsterdam city.
- Made up of 8 islands.
- Challenge: IJburg wants to respond to future flood risks from rising water levels.
- IJburg is a fertile test-bed for floating homes (more than 100).

## Floating homes IJburg, City of Islands



### Floating homes:

- constructed on concrete bases and prefabricated
- customised homes.
- able to change and adapt to future conditions
- plug on to the mains supply of water, heat, and electricity via floating jetties
- These jetties can always be detached, moved and plugged on elsewhere.
- Autarchy: able to 'survive' for a certain period.

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