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# The Institutionalization of Flood Protection: Issues in the Netherlands.

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PROMO

Deltares

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# The Institutionalization of Flood protection: Why The Netherlands?

- The Netherlands is a river delta, lying partially below the sea level, with a lot of flooding risk
- It has a history of ages of flood protection
- There are some interesting developments going on in the Dutch policy and practices of water management

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# The Netherlands is a Delta



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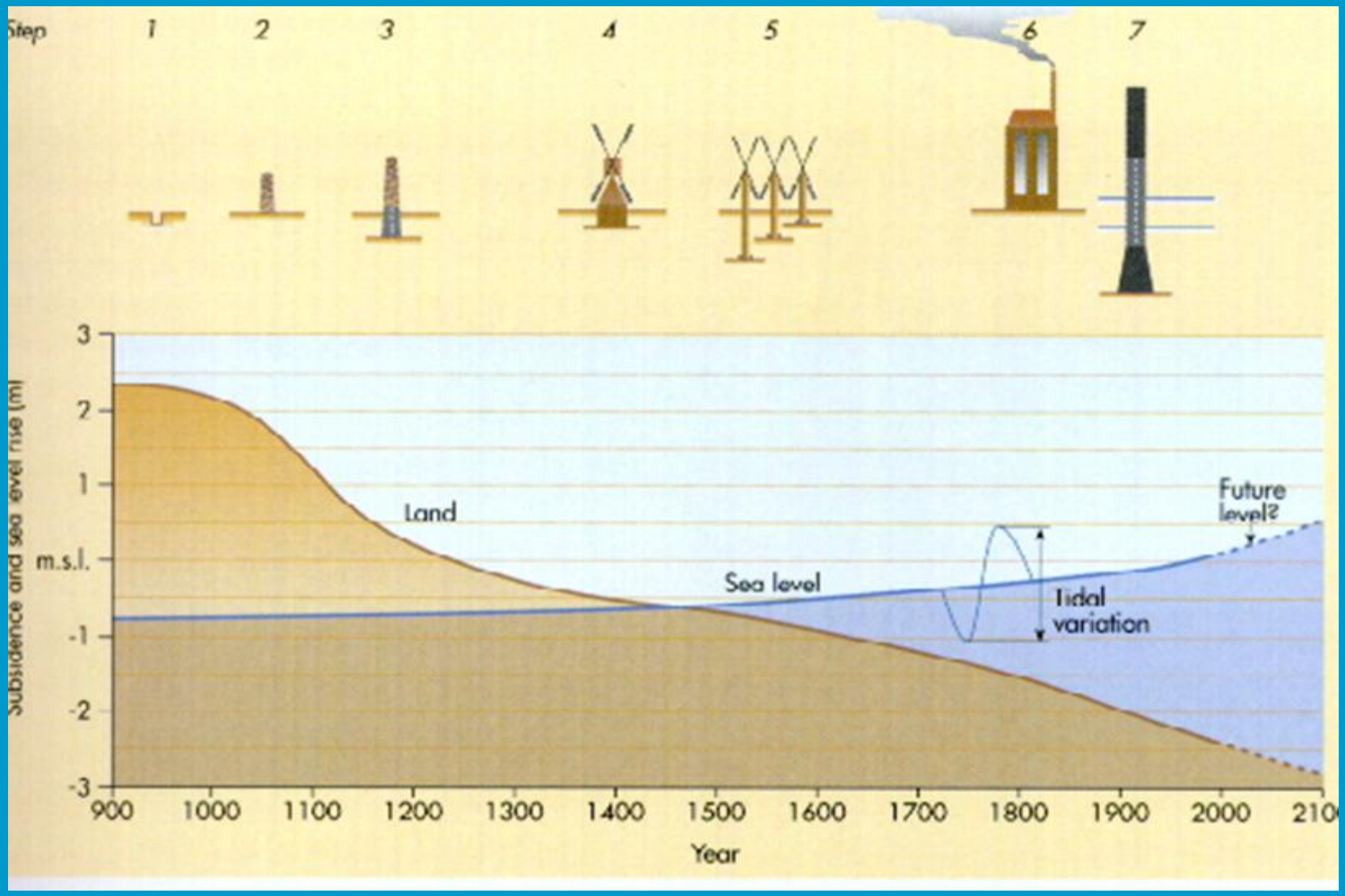
# Ages of Flood Protection

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# The Institutionalization of Flood protection: Some Issues…

- Governance structures for managing dam safety
- From probability-based to risk-based flood protection
- Water management and climate change: policies and practices

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# Governance structures for managing dam safety

Centralized responsibility in many countries, but…

- Measures and effects are often local
- Short term focus of national policy making
- Competition for funding investments and maintenance
- Central responsibility reduces local commitment

Nevertheless…

- Above-local measures and effects may be important
- Competition between local areas' interests

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# WHO: Dutch Governance Structure for Water Management: Mixed Approach

Pre 1300: Private, the church, nobility, farmers…

Pre 1850: Collective, many small water boards, but private investment in new polders

Post 1800: Mixed, Dept. of Public Works (Rijkswaterstaat) and waterboards

- Primary dams: RWS and waterboards
- Large rivers and new large deep polders: RWS
- Secondary dams: Water boards, also water quality, water transport, environmental protection…

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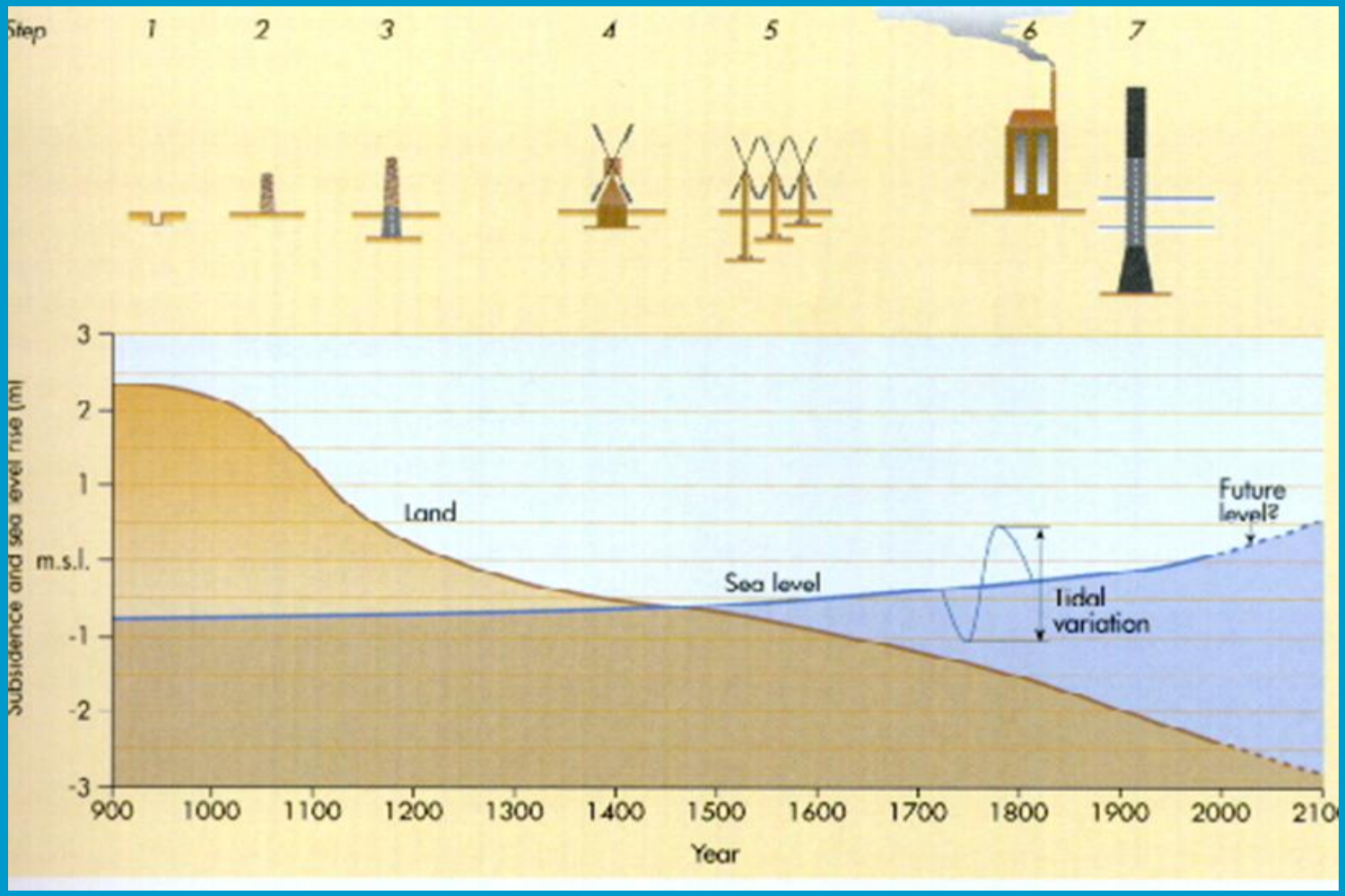
# Scale, scope and governance...

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# Dutch Funding Structure for Water Management…

Primary dams:

- Investments: Dutch Taxpayer
- Maintenance: Inhabitants of the Water boards' areas

Primary Waterworks: Dutch Taxpayer

Secondary dams and waterworks:

- Investment and maintenance: Inhabitants of the Water boards' areas

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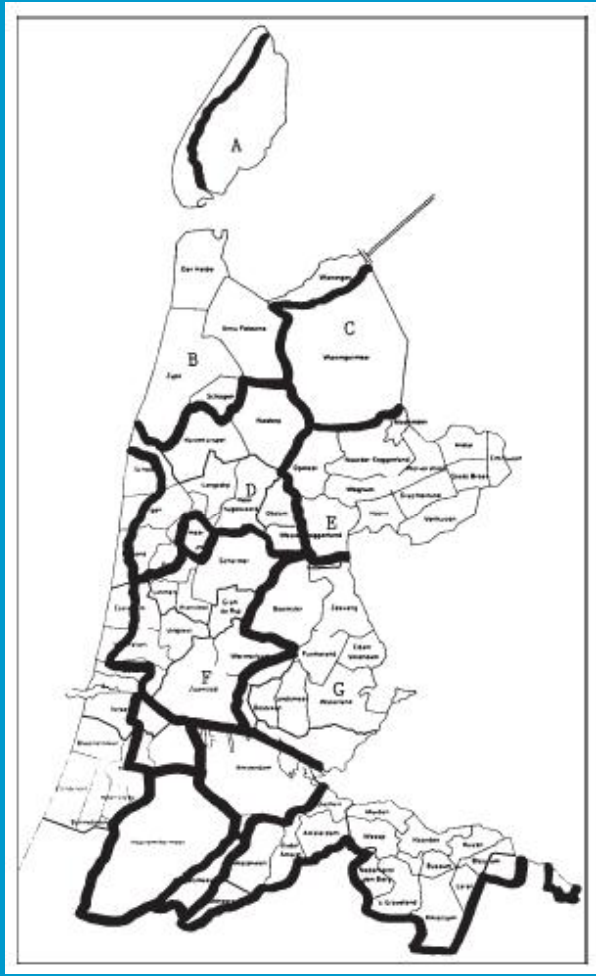
# From 1000 to 26 Water boards.....





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# Water board's principles on *Access and Allocation*

- Areas under control are managed separately from the larger water system
- All property owners and users are 'inhabitants' of water boards' areas
- Provision of services (dry feet, sufficient and clean water, water transport, etc.) takes account of local hydrological, economic and environmental conditions
- Maintenance rules are congruent with the uses of the local system
- The allocation of tasks and costs to 'inhabitants' is proportional to their use of services

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# On *Decision making* and *Monitoring*

Individual users can be elected in the Waterboard and have voting rights to make and modify rules

Executives accountable to the users monitor the provision of water services to the users

Executives accountable to the users monitor the condition of the watersystem

Water boards have to report to the province and are evaluated by the state (RWS)

Allocation of maintenance tasks to waterboards and state (RWS)

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# On *Sanctioning* and *External Embedment*

Sanctions for inadequate maintenance by users start very low but become stronger

Rapid, low cost, local procedures exist for resolving conflicts among users, or with waterboards

Waterboards and their management are recognized by government

The local water systems are closely connected to the larger system, governed by the Province and the state, as nested layers of the water system

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# What about the robustness?

Entry and exit is not possible
Actors know each other and their "reputation"
They communicate intensively
Transparency matters a great deal
Equitable outcomes and sanctions
Actors value the outcomes sufficiently
Longer time horizons are prevailing

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# But still recurrent political pressure on the "single issue" governance layer

State, provinces, waterboards, municipalities…

Claims for efficiency

Interaction and competition of policy domains (spatial planning, economic development, environmental issues) and in policy execution

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# HOW: From probability-based to risk-based flood protection

- The last flood…
- February 1953 flooding disaster…
  - 1836 Victims
  - 1800 $km^2$ flooded

Never again!!!!

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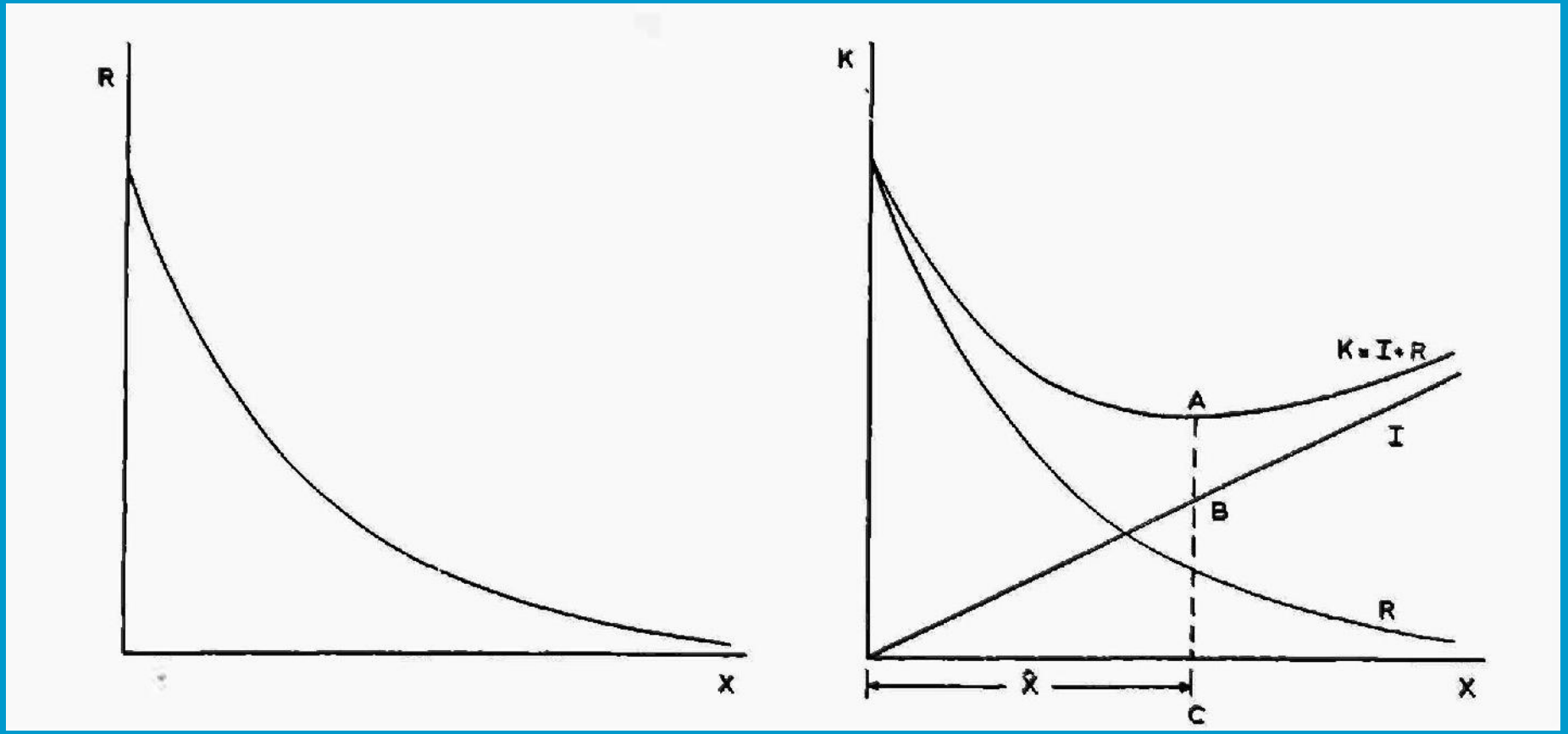
# Minimize Cost = Investment + Risk

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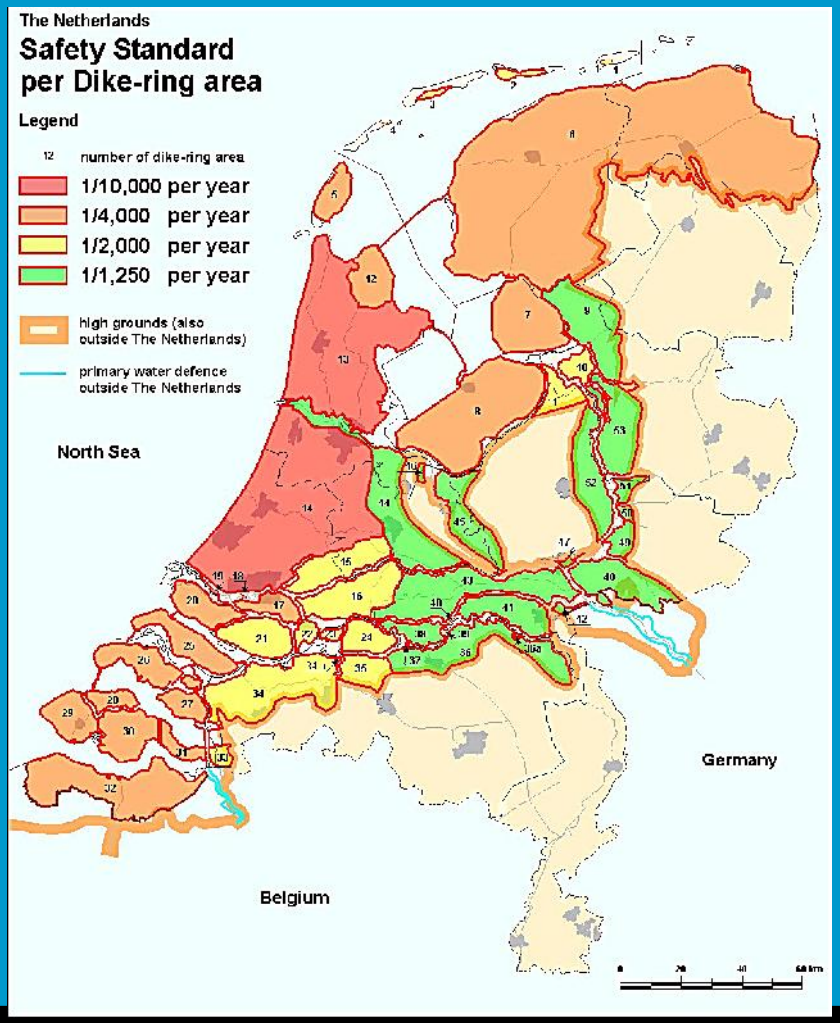
# The Flood Protection Act (1996)

- Probability based safety standards per 'dike ring' area (frequency of water exceeding the design level)
- A 5-yearly safety assessment of all primary flood defences
- Guidelines for safety assessment & design of flood defences

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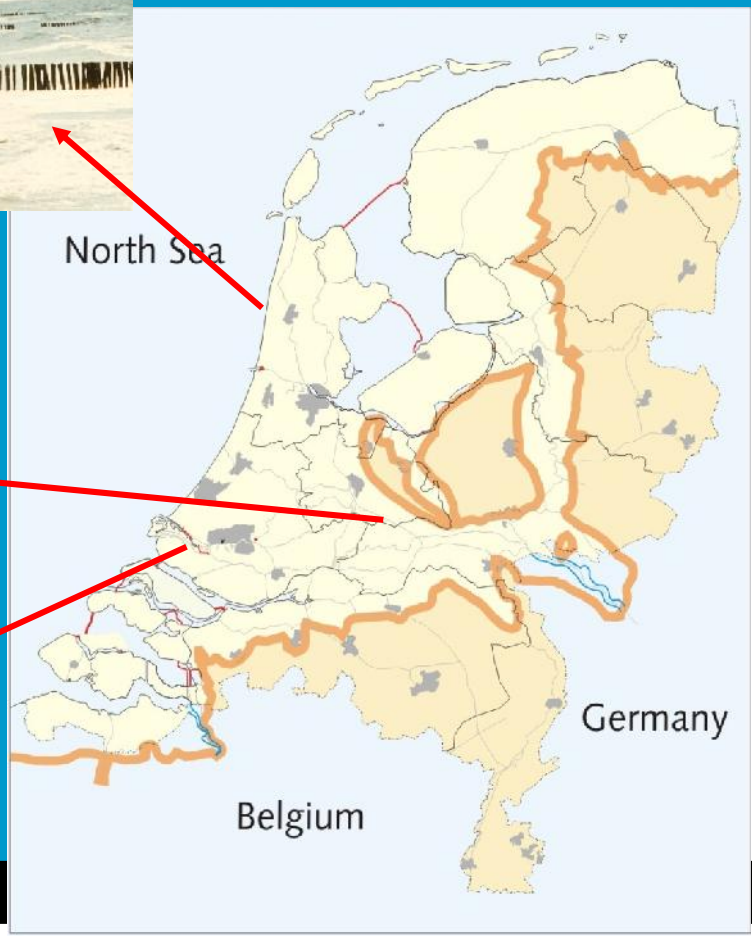
# Present flood defence system

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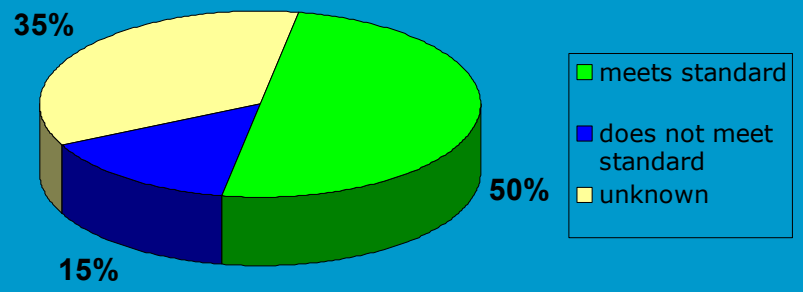
# 5-yearly safety assessment

- Carried out by the water boards to judge whether the flood defenses meet the standards
- National government provides:
  - Hydraulic loads
  - Guidelines
- Based on the assessment, improvement works are identified
- Estimated costs of improvement (2006-2015):3 billion €

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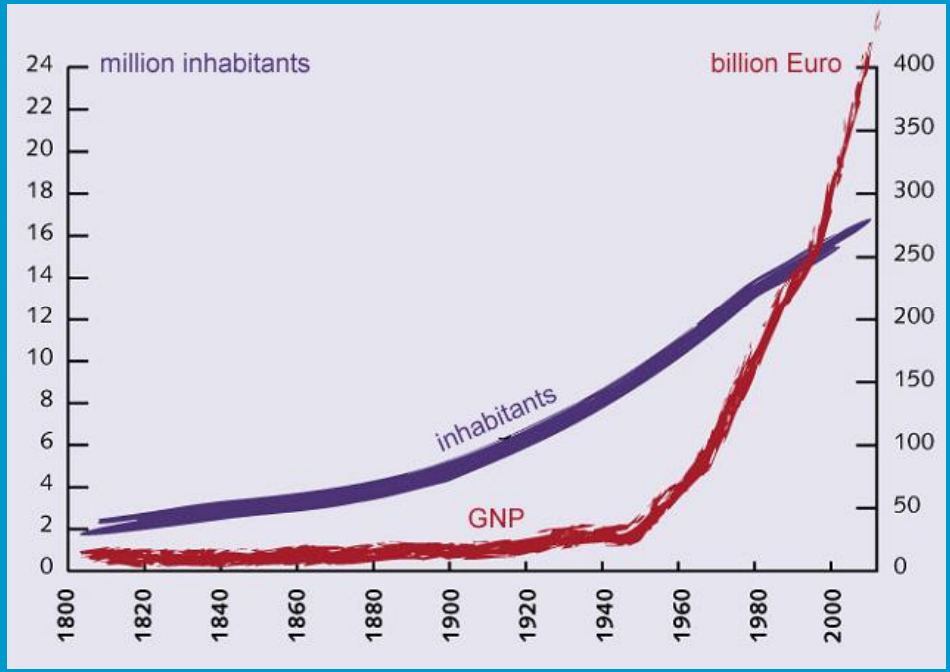
# Yet, flood risk is changing and the climate too…

•Many developments since the 1960's:

- Population from 10 to 16 million
- Economy: GDP from 17 to 400 billion €
- Climate change: rising sea level; increased flows of rivers Rhine and Meuse
- Subsidence of low lying polders
- Increased human activity in lowest lying areas

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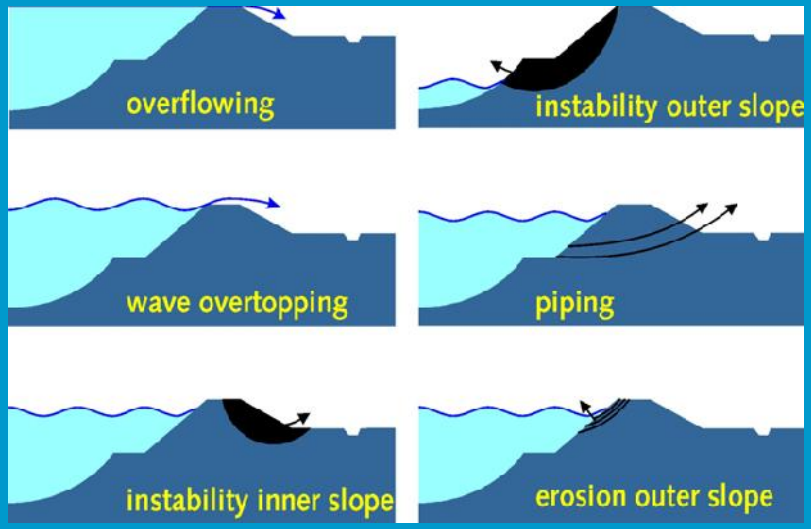
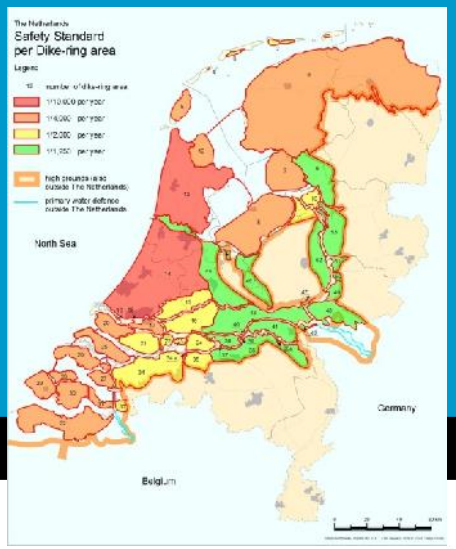
# Towards a new prevention policy…

Change in type of standard:
- prob. exceeding water level ➔
- prob. of failure of flood defence

Height of new standards based on:
- Cost/Benefit
- Individual Risk
- Group Risk
- Longer term developments

Attention to:
- Differentiation of safety standards
- Compartmentalization of dike rings
- Other types of flood defenses

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# And a multi-layer approach to water safety…

Disaster management, evacuation, preparedness

Sustainable, flood proof spatial planning and building

Prevention of flooding; reduction of probability of flooding

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# New policy arrangements, and their implications…??

- Criteria, local impact, and governance
- Differentiation, valuation and information
- Tensions between the individual and the public realm

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# Criteria, local impact, and governance…

- Risk instead of probability links flood prevention to water and crisis management practices
- Local spatial and hydrological characteristics have a major role in flood protection and crisis management
- Disaster preparedness also touches upon the many other infrastructures: transport, energy and communication
- Flood prevention and damage control also by individual property developers, builders and house owners?

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# Differentiation, valuation and information

- Implementation of new principles and rules for (e)valuation of local flood risk
- Codes, rules and decisions are to be negotiated
- New arrangements should incentivize civilians and businesses
- Very different communicative traditions and cultures in the three safty “layers”
- A role for insurance?

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# Tensions between the individual and the public realm

- Without floods, it is hard to engage the public and policy makers
- The message preferred by politicians; 'that it is safe all over the place'.
- Individual interests and public responsibility are often mixed up, like in spatial planning…
- Local variation in individual perception of vulnerability and flooding risk
- Citizen's perceptions: not a perception to be 'adjusted', but a powerful social force to take into account

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# To sum up…

- The governance of flood protection involves different levels of scale and scope
- In the governance of flooding risk, crisis management, infrastructure maintenance, preparedness and flooding control should meet
- Governance structures should address the right scale from the right scope
- The regional role of water boards is important, as the spider in the web
- Climate change is one among the several factors, demanding enhanced flooding protection…

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