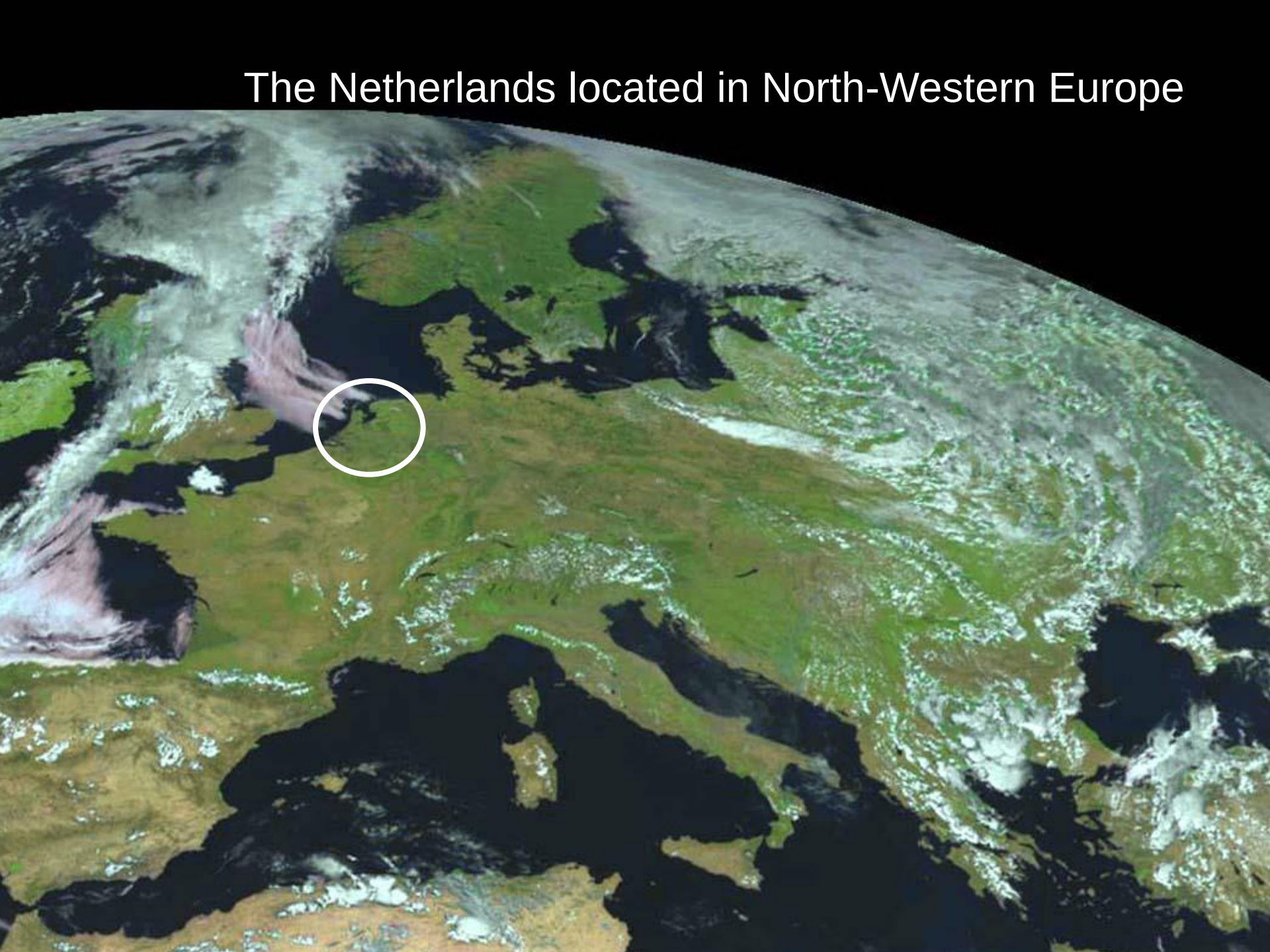
Netherlands Commission for Environmental Assessment

SEA for the Water Sector

experiences from the Netherlands

Arend Kolhoff, Netherlands Commission for Environmental Assessment

The Netherlands located in North-Western Europe

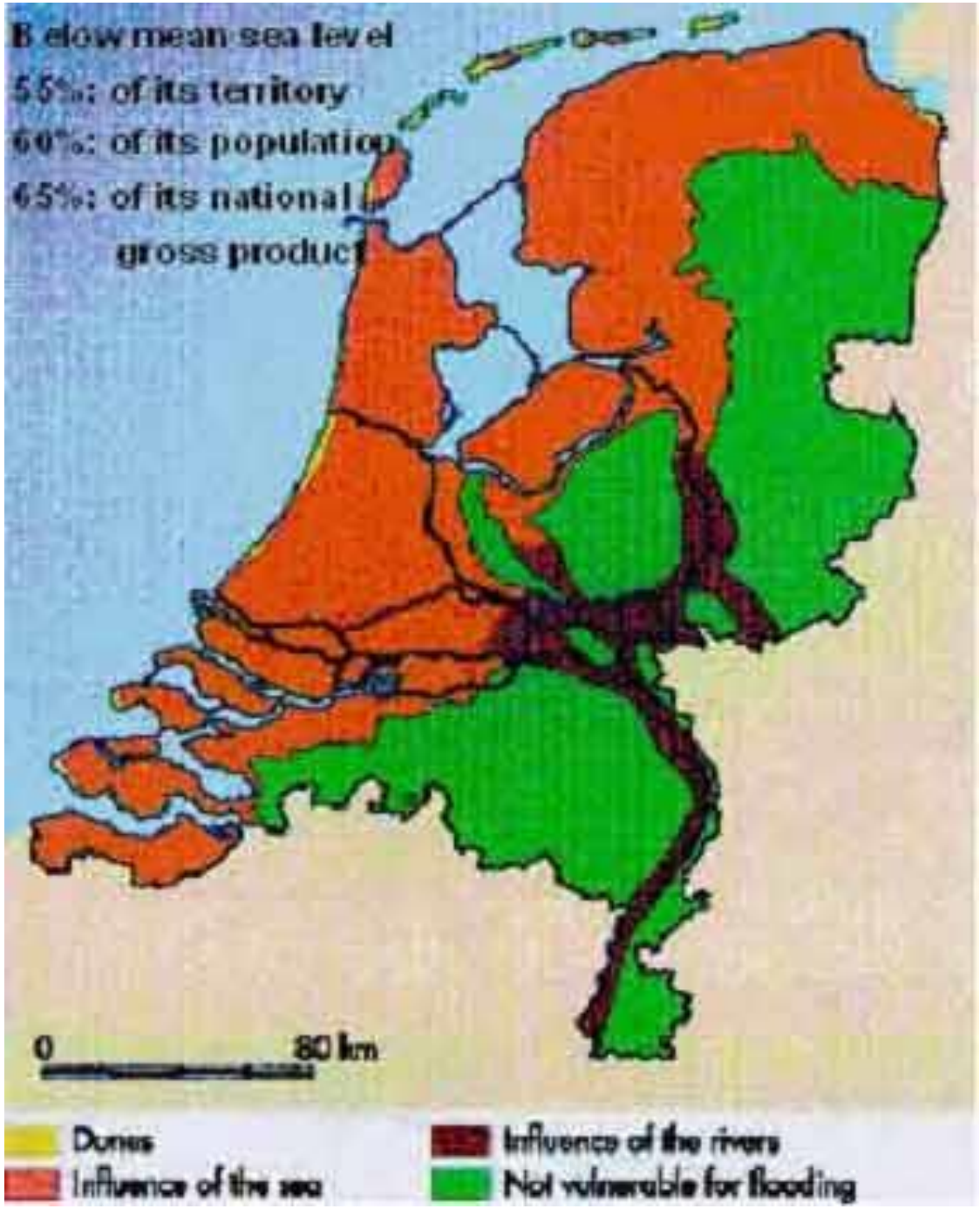


The Netherlands a delta country

- Population 17 M.
- NGP 460 B.

  11th economy
- Delta 2 main rivers
- Dyke construction

  about 1200 years


Below mean sea level
55%: of its territory
60%: of its population
65%: of its national
gross product
0
80 km
Dunes
Influence of the sea
Influence of the rivers
Not vulnerable for flooding

Water management in the Netherlands guiding spatial development

National (Min. of Transport & Water)	National Waterplan (strategic, > 100 yr) **SEA**	**(Inter)national**
Provincial governments	Provincial waterplans (strategic, > 10 yr) **SEA (integrated SP)**	(sub)River bassin management plans (Rhine, Meuse, Scheldt, Ems)
Waterboards	Water management plans (operational) **EIA / Watertest**	
Municipalities	Municipal plans (operational) **EIA**	**sub basin SEA**

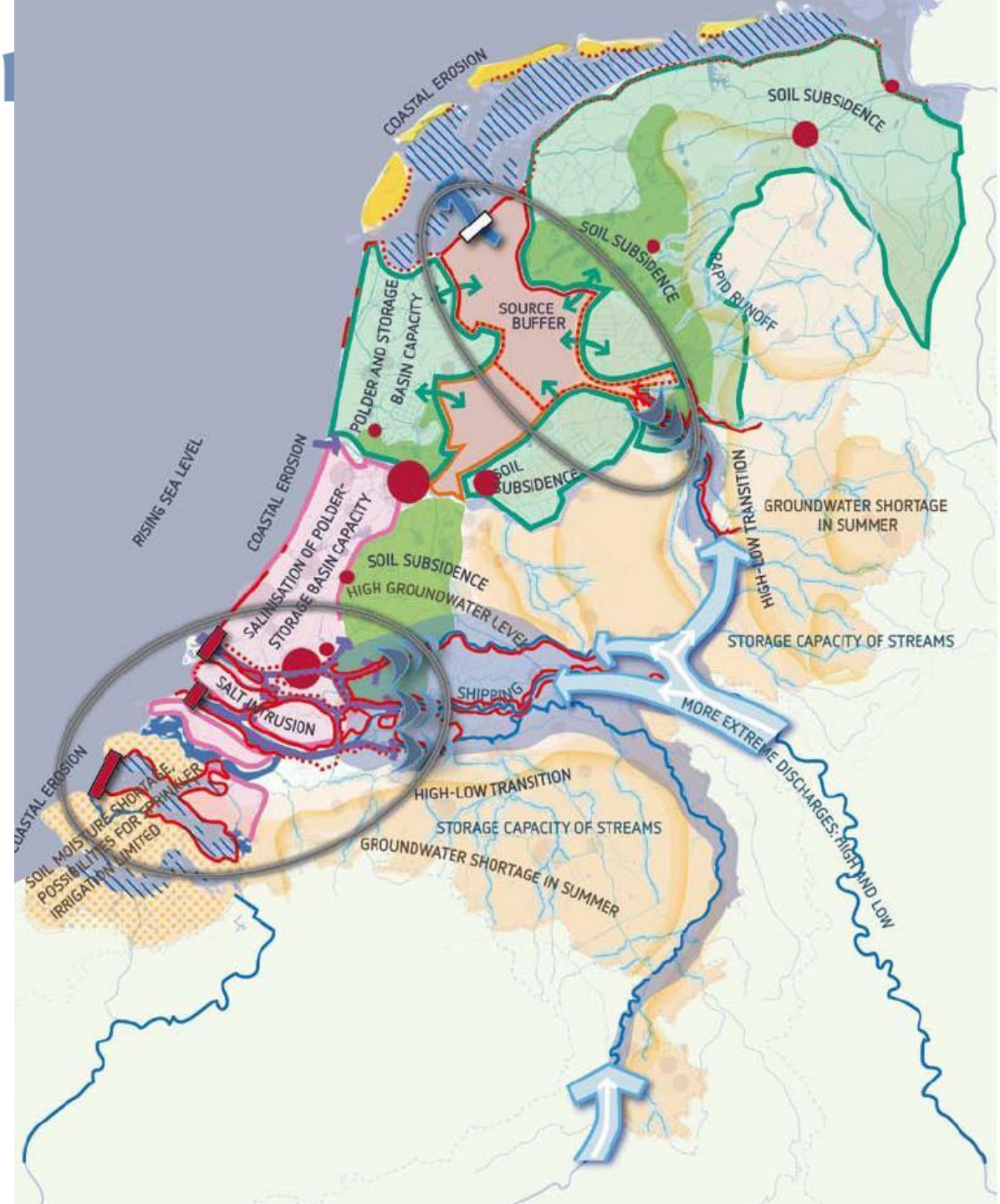
Themes National Water Plan

- Flood safety
- Water shortage & freshwater supply
- Flooding / water logging
- Water quality
- Use of water

- Integration with other strategic documents, such as Spatial Strategy and National Adaptation Strategy “Make Room For Climate”

Map 3

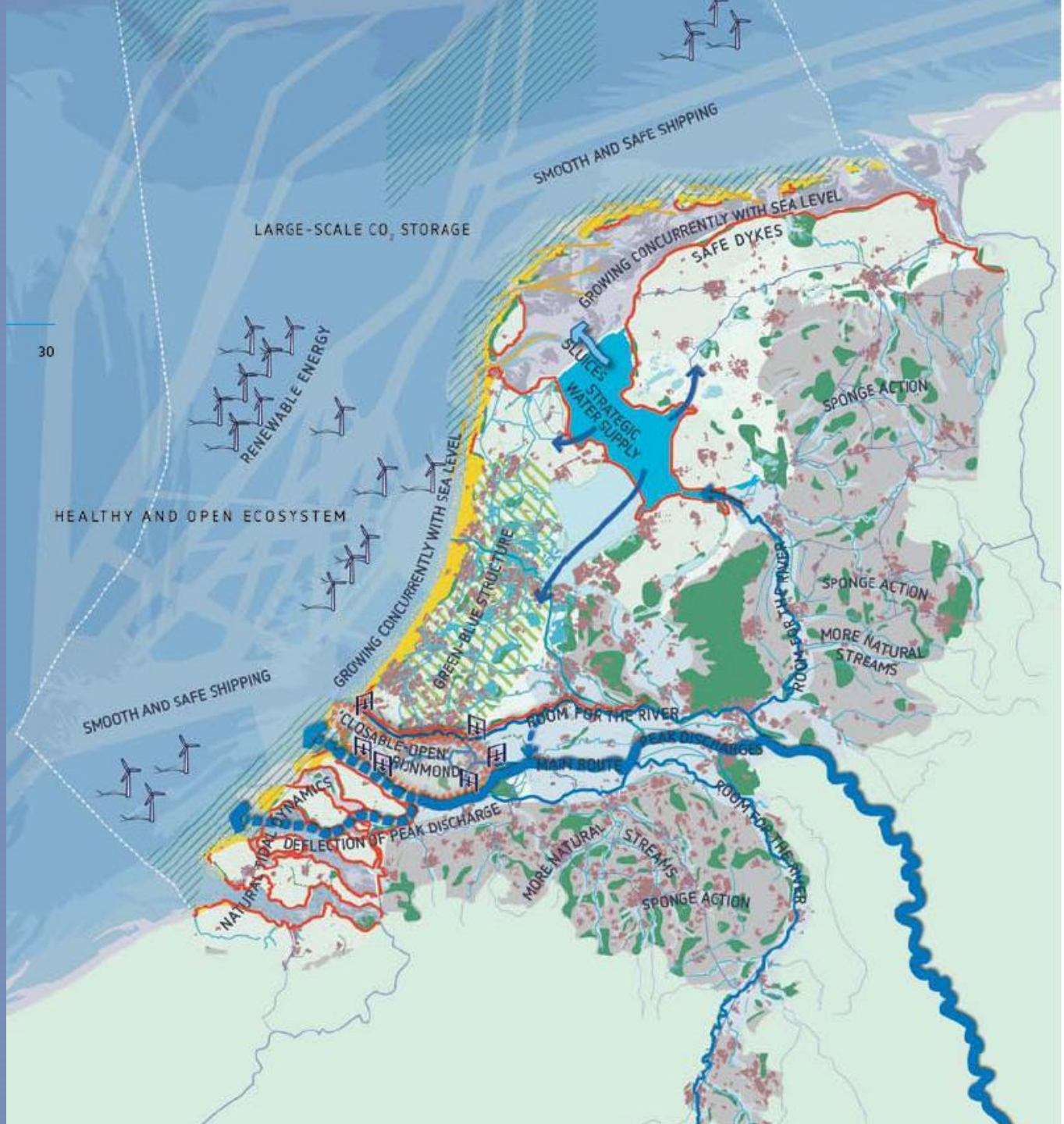
Key water tasks



- large, multiple task with supraregional impact
- water quality and freshwater supply under pressure
- water supply from IJsselmeer under pressure
- saltwater wedge intruding further inland, inlet points under pressure
- potential shortage of soil moisture
- attention to level management and quality in IJsselmeer area
- area subject to subsidence
- city in area with high level of subsidence
- increase in extremely high river discharges
- lower average summer discharge in rivers, extremely low more often
- high-low transition sensitive to flooding/ waterlogging
- periodical flooding in stream valleys
- salt meadows and sandbanks can become submerged after rise in sea level
- attention to height and stability of flood defences (2008-2050 period)
- attention to height and stability of flood defences (2050-2100 period)
- drainage capacity of IJsselmeer under pressure when sea level rises
- area of influence of sea/IJsselmeer moves upstream when sea level rises

Map 4

Target Situation



target situation

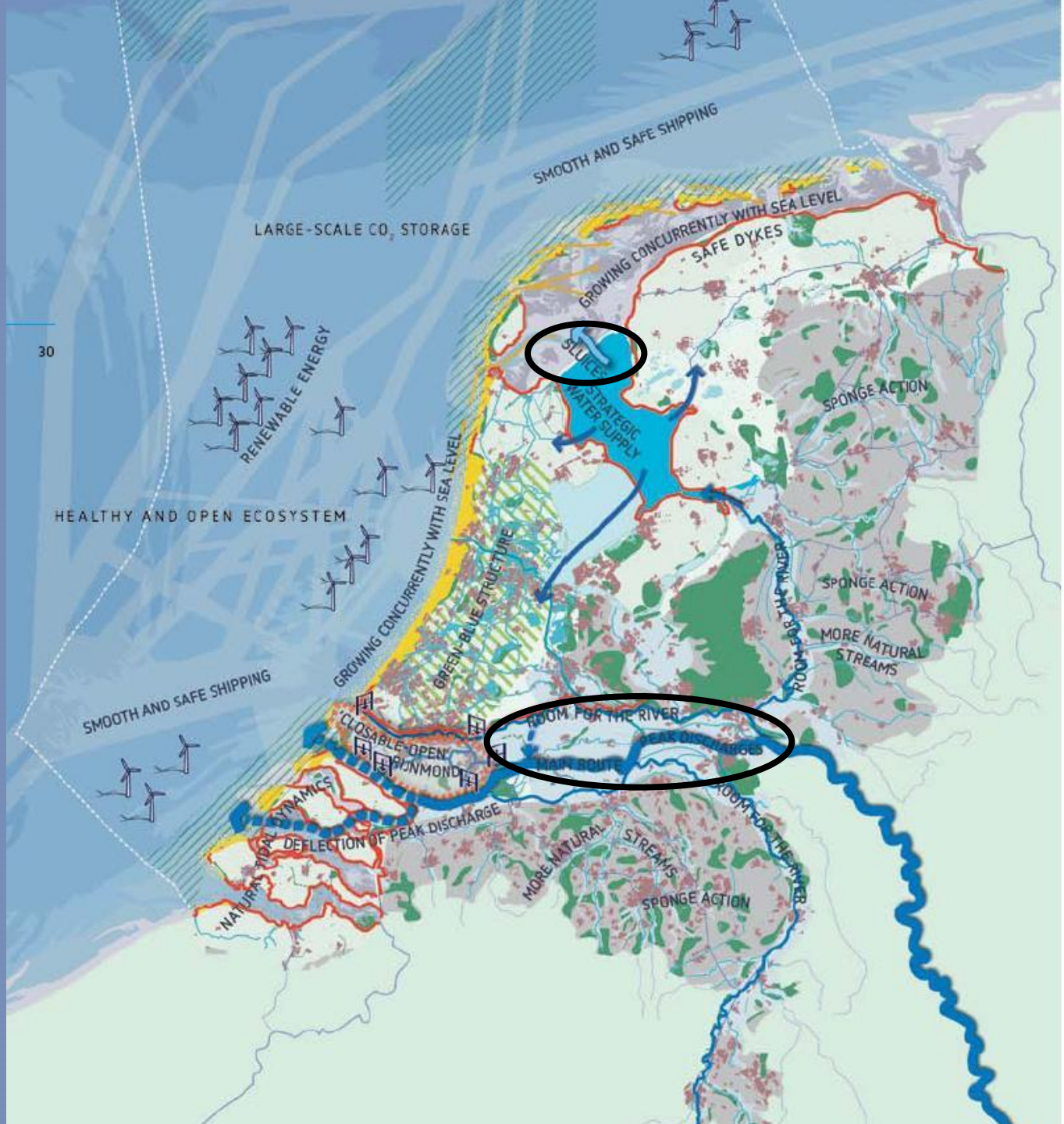
- safe dykes
- closable-open Rijnmond ring
- flood defences
- growing concurrently with sea level
- Waal, main route for peak discharges
- deflecting rivers' peak discharges via delta to the sea
- area around the rivers: Room for the River
- green-blue structure
- natural tidal dynamics
- strategic water supply
- drain excess water to Wadden Sea
- sponge action
- more natural streams
- smooth and safe shipping
- renewable energy
- nature areas at sea

subsoil

- urban area (situation around 2015)
- nature and forests
- sandy soils
- area around the rivers
- peat grassland
- marine clay
- dunes
- lakes
- sea

Map 4

Target Situation



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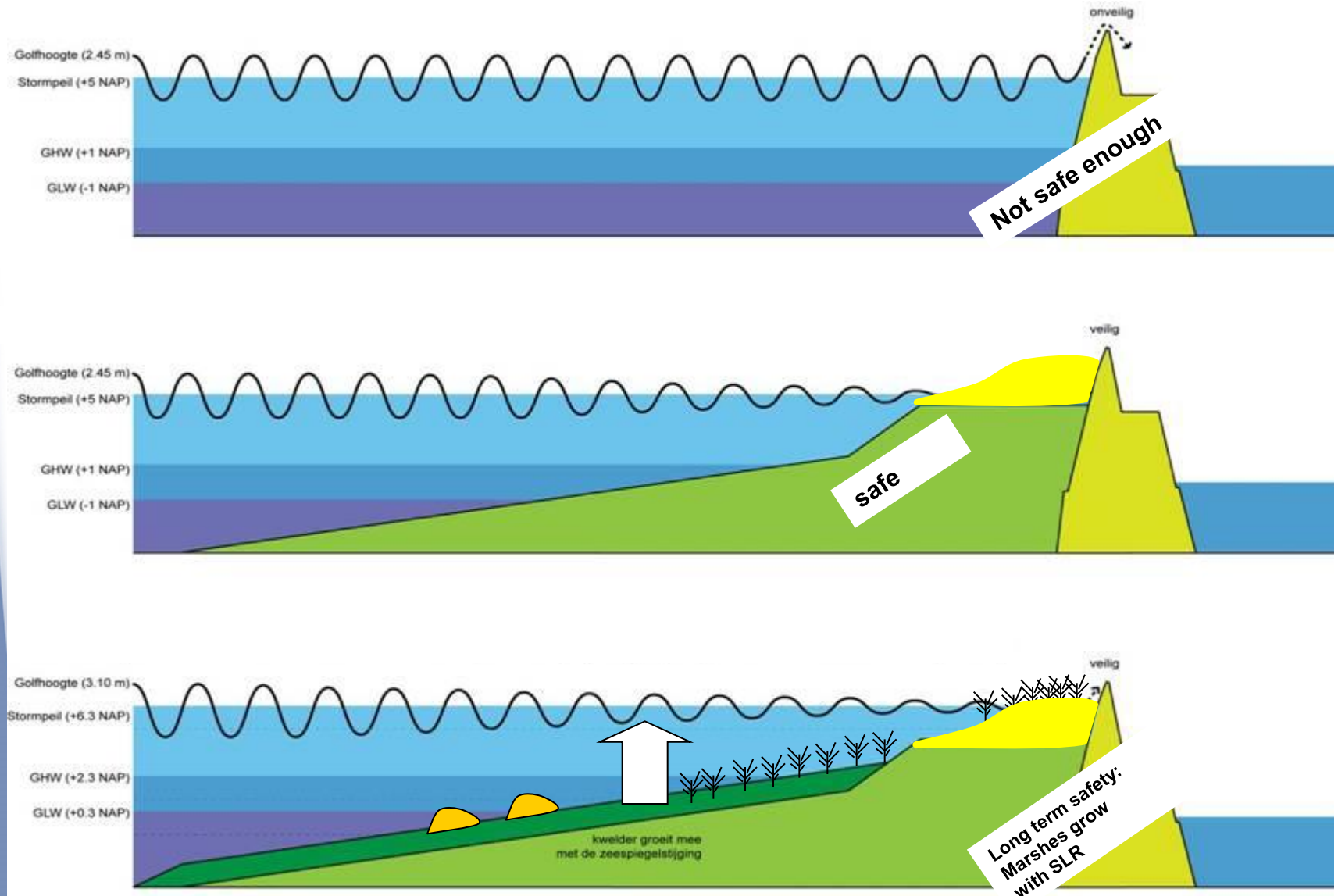
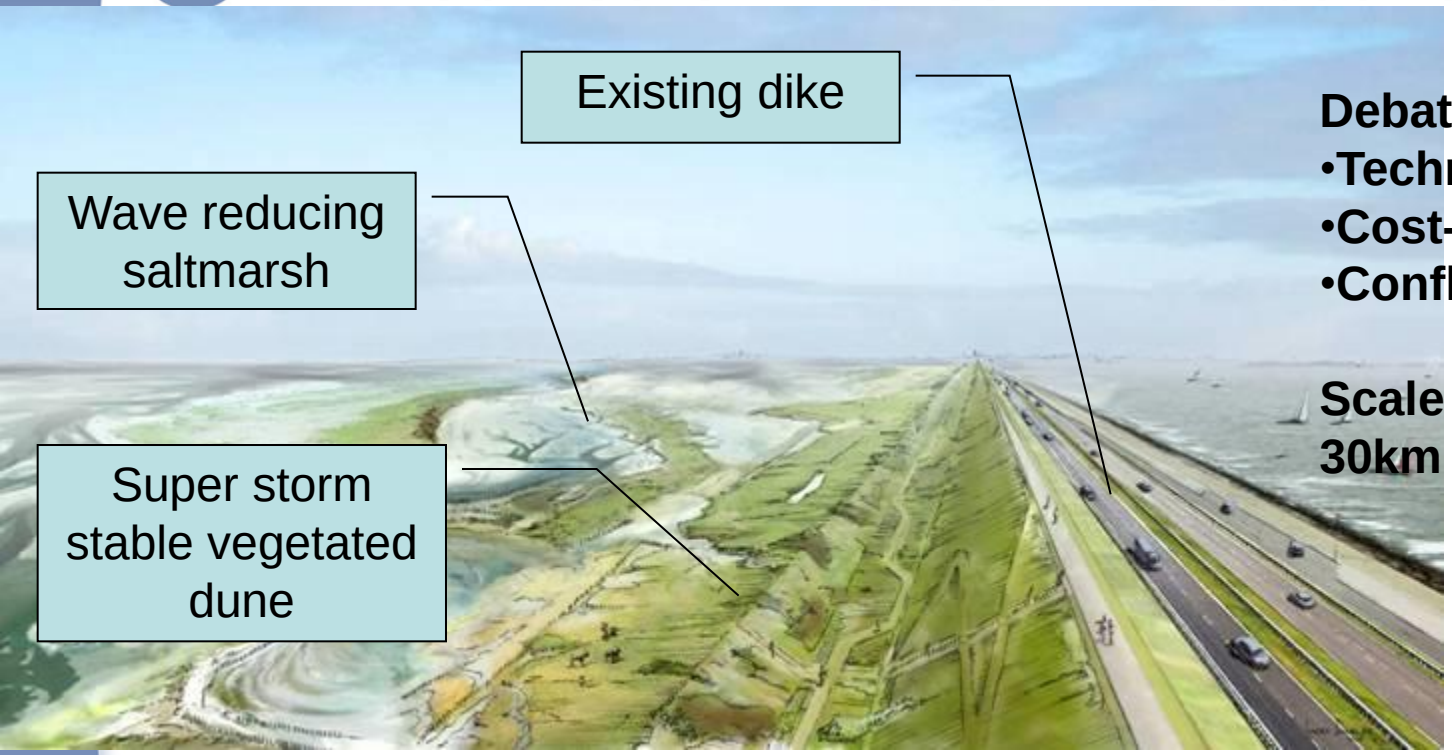
Example 1: Green adaptation of coast



Situatie bij een superstorm, 1x per 10.000 jaar

Soft Safe Dike: salt marsh/dune/dike hybrid



Debate:
- **Technical feasibility**
- **Cost-benefit**
- **Conflict with Natura 2000**

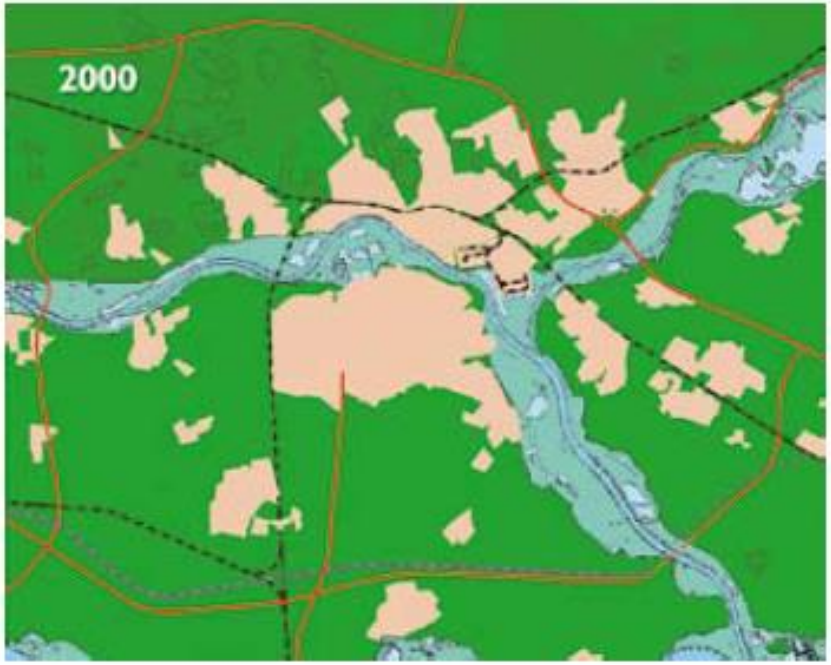
Scale 500m wide
30km long

Saltmarsh grows with sea level and maintains stability and safety
Flexible, low tech, low maintenance cost, longshore connectivity

Commissie voor de milieueffectrapportage

Room for the River
An SEA case
from the Netherlands

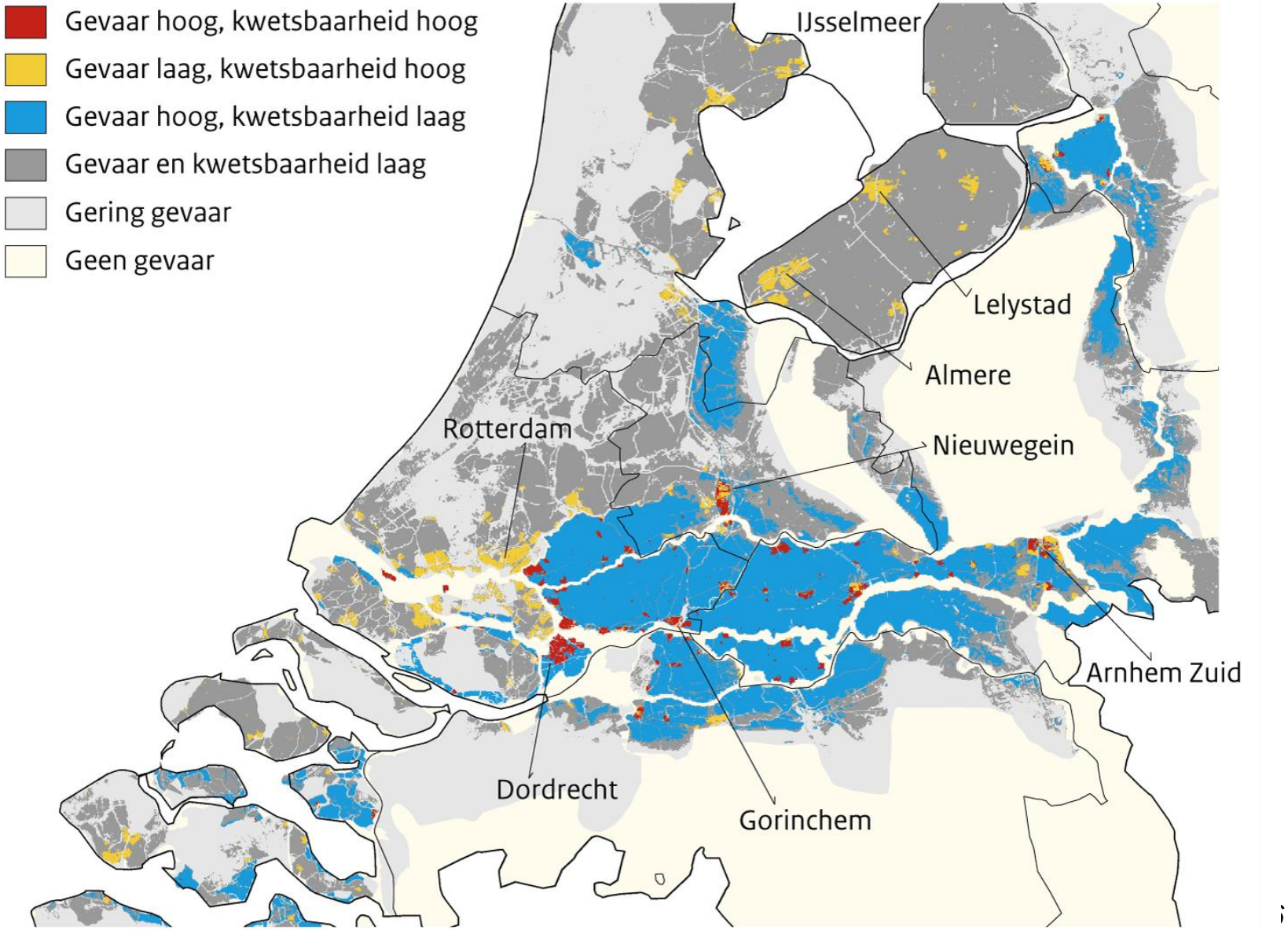
River Rhine: Risk of flooding increases due to Climate change



Urban development in the Arnhem area

The river Rhine in The Netherlands

Risk of flooding



Bron: De Bruijn & Klijn (2009)

Government Plan Space for Rivers

Objectives:

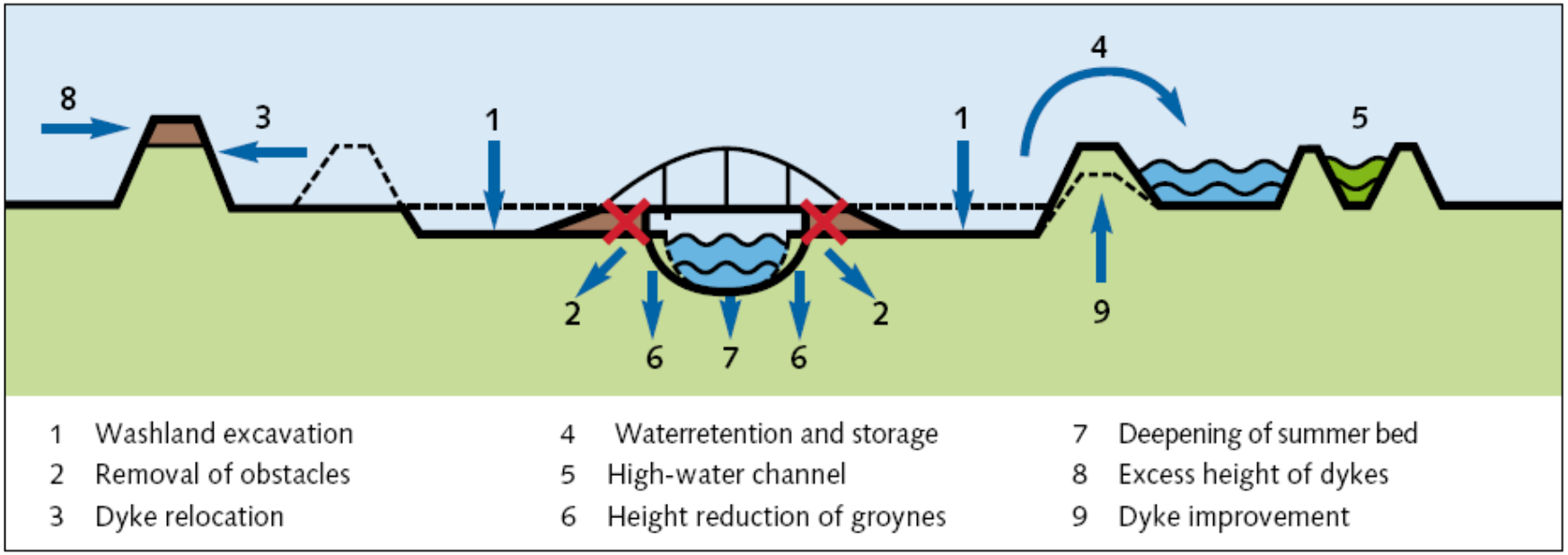
- Realise a higher discharge capacity for the Rhine by 2015 (16,000 m3/second)
- Maintain safety level 1:1350
- Improve the quality of the environment of the river basin
- Provide extra space the rivers will need throughout the coming decades

Strategic Environmental Assessment (SEA)

- SEA mandatory, supports development of Plan - Space for rivers:
  - Identifying alternatives for ~ 30 sites
  - For each site feeding the debate between stakeholders by:
    - Identifying the interests of stakeholders
    - Developing alternatives
    - Comparing the pros and cons of alternatives
    - Selection of preferred alternative per site

Alternatives

Site specific alternatives are developed through combining the following technical measures

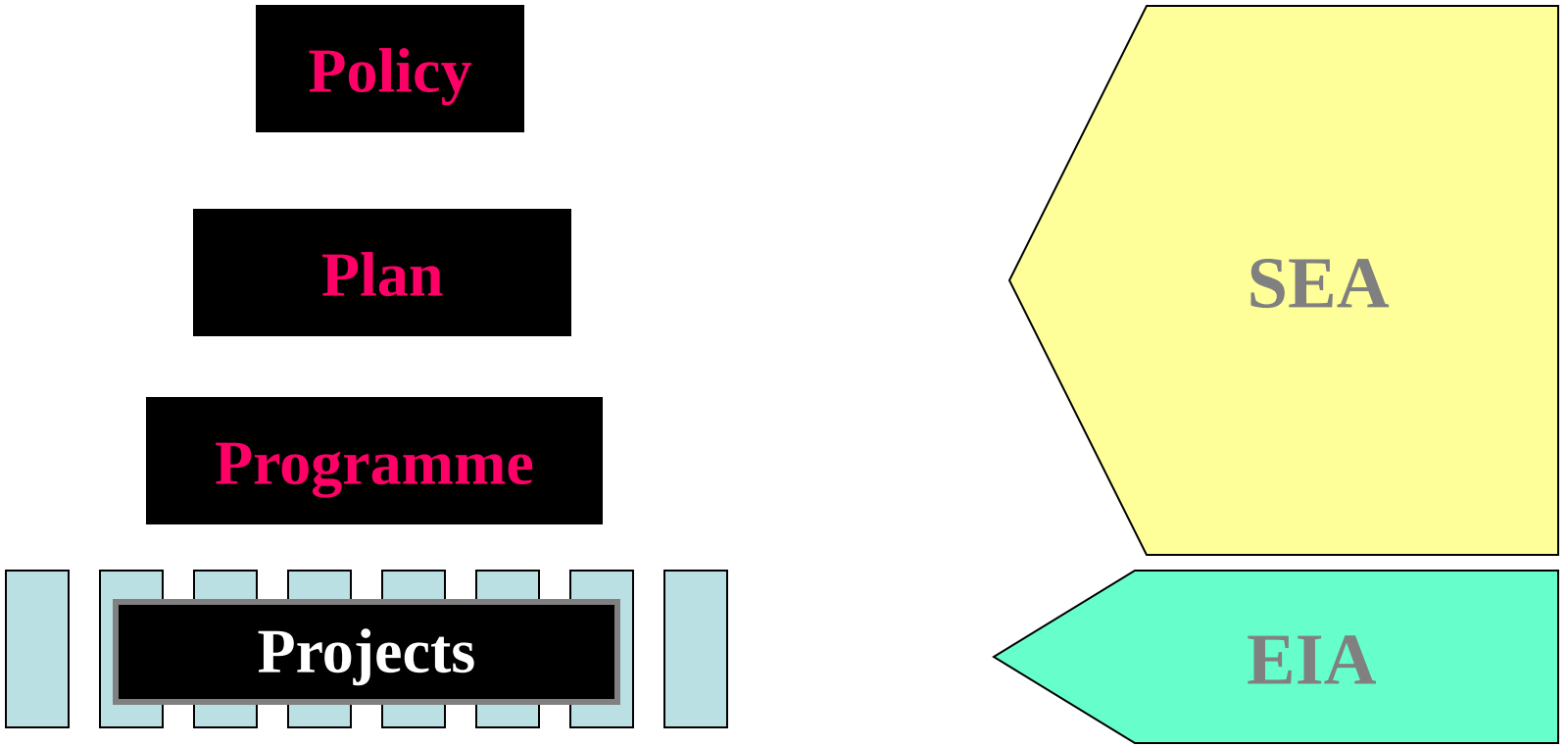


At ~ 30 sites projects implemented (different alternative

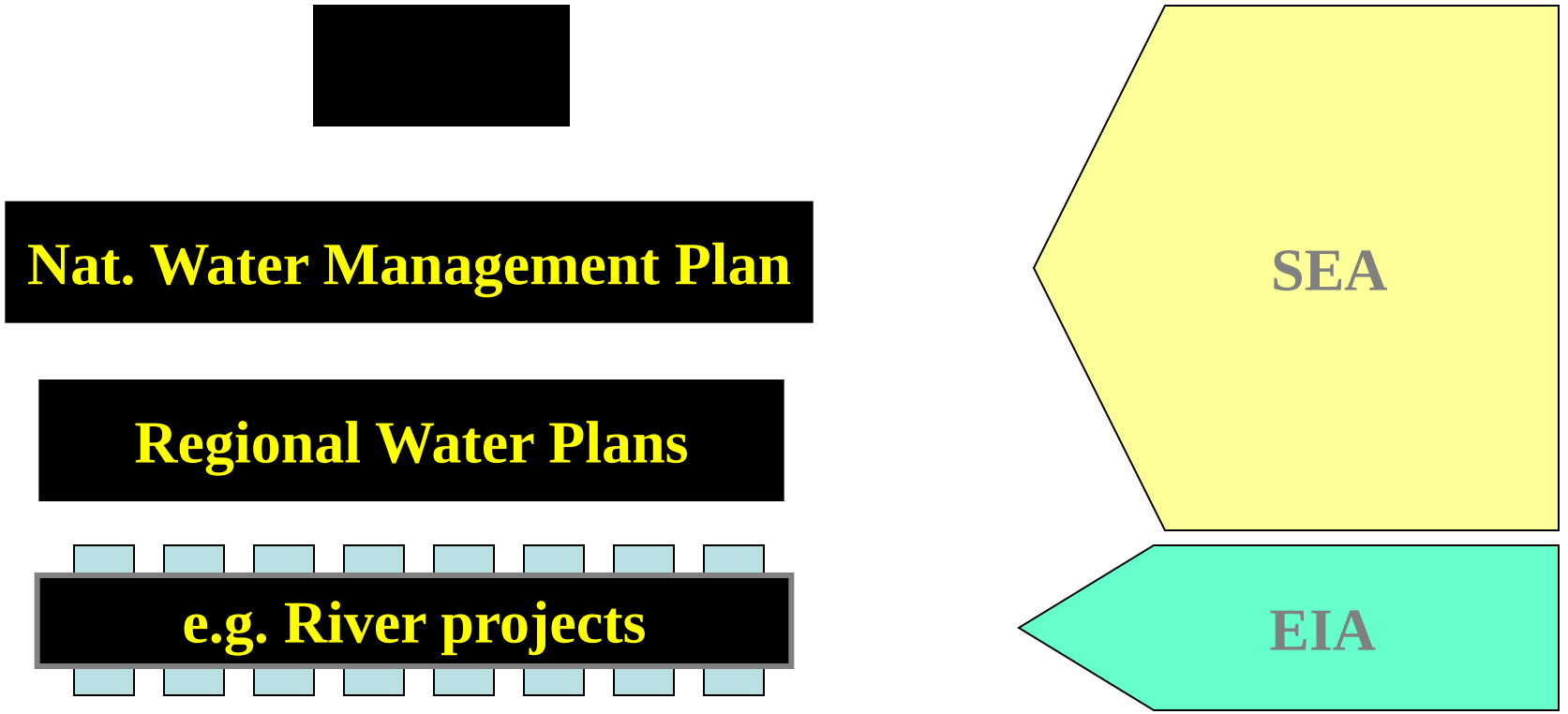
Location Nijmegen – Lent

- Artist impression of the new climate proof situation

Decision-making hierarchy



Decision-making in Water sector



Added value of SEAs

National Water Plan

- short term: justification of choices, identified points to be elaborated
- long term: investigation of development directions; impact, risks and costs

Space for rivers

- integrated approach shows (social) costs benefits of alternatives
- participation contributes to public support

Provincial plans

- co-operation between different levels of water management
- most choices were already made; little opportunity for alternatives
- environmental impact often positive
- points of attention for future actions