



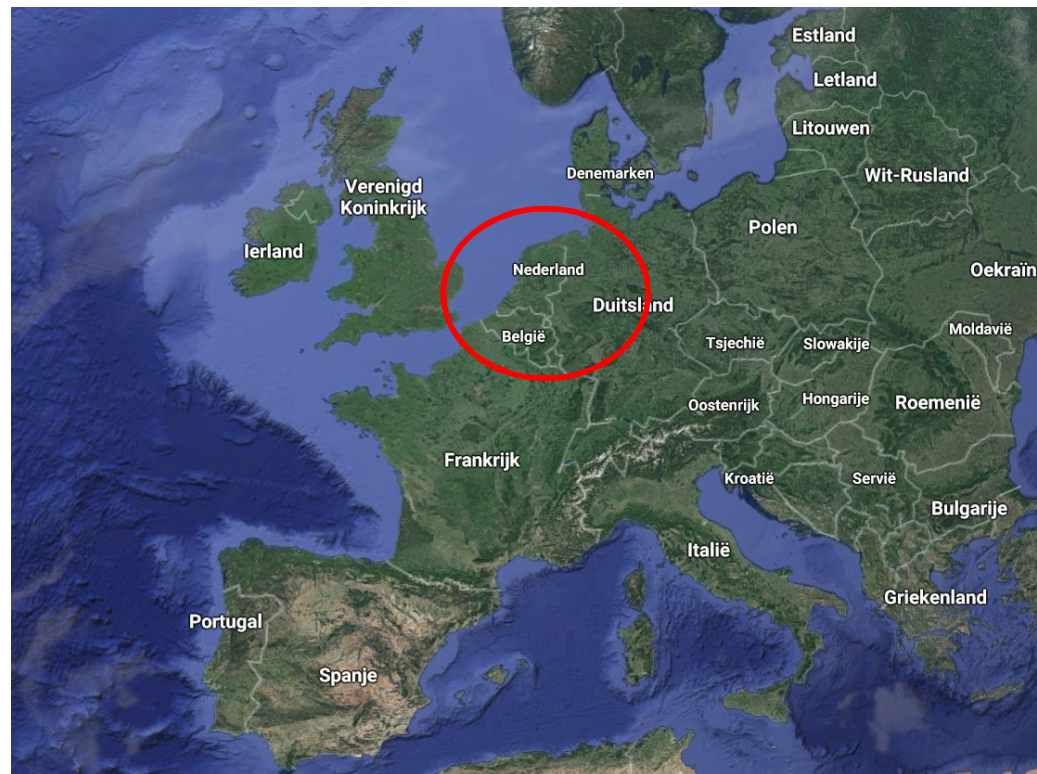
800 years of climate adaptation

Johan Remijn

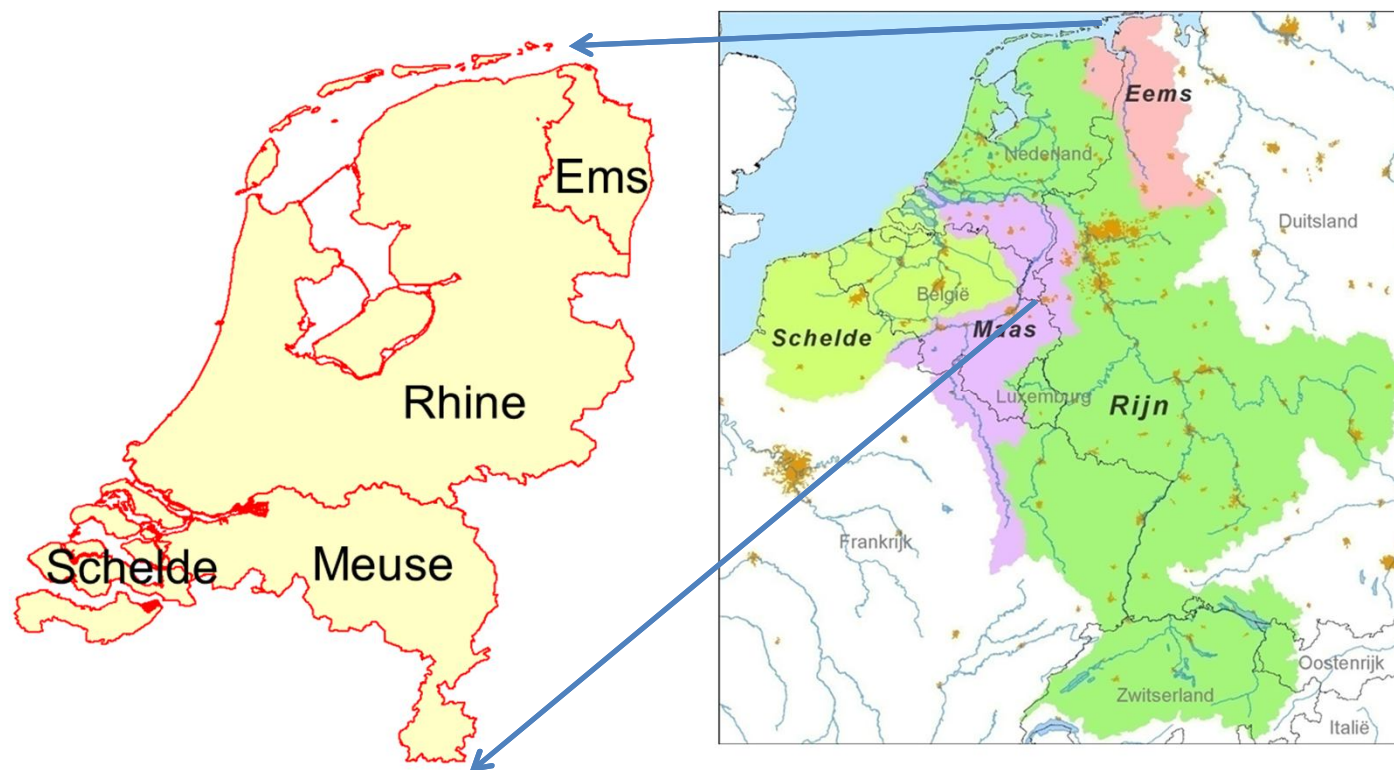


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Rijnland

The Netherlands

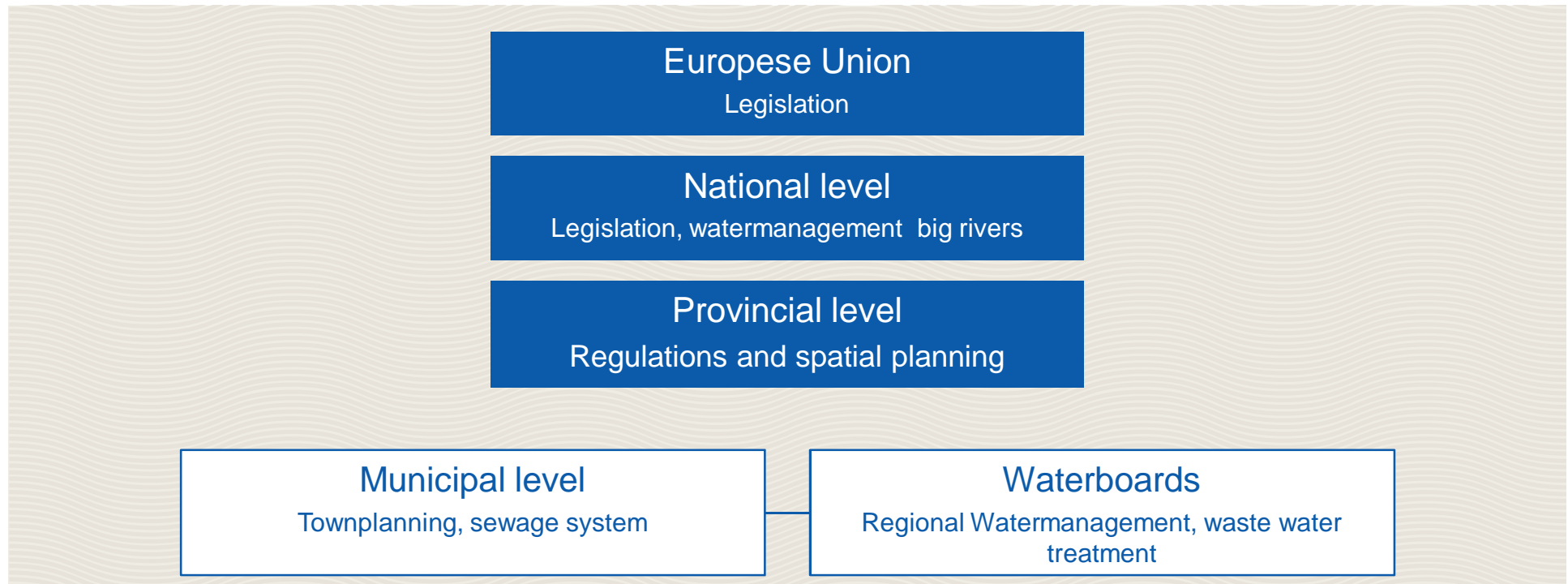


International level



Hoogheemraadschap van
Rijnland

Watergovernance in the Netherlands



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The Netherlands without flooddefense

29% of the Netherlands under sealevel

55% of the Netherlands will flood

9 million people

70% of GDP



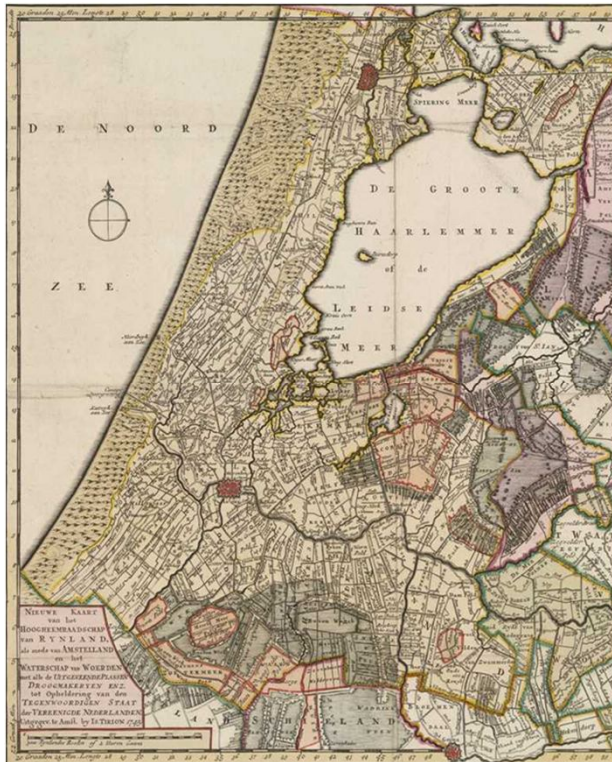
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Primary pumping stations Rijnland

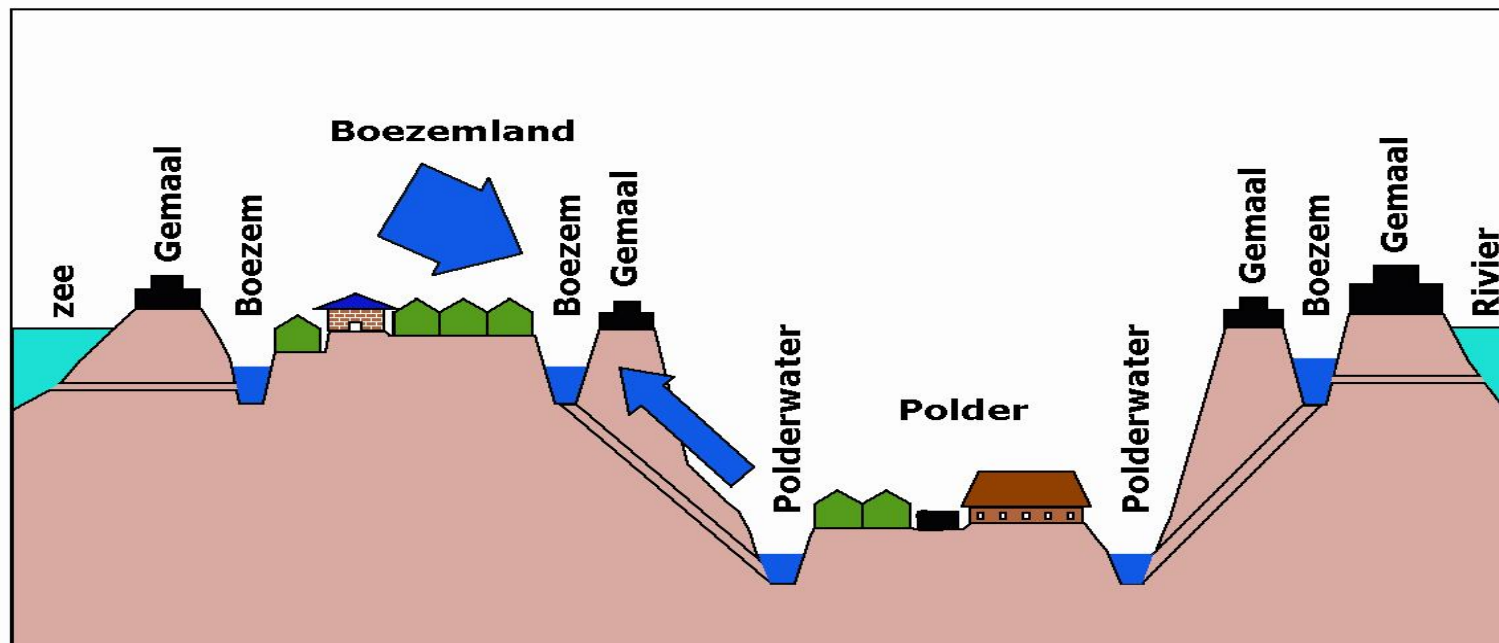


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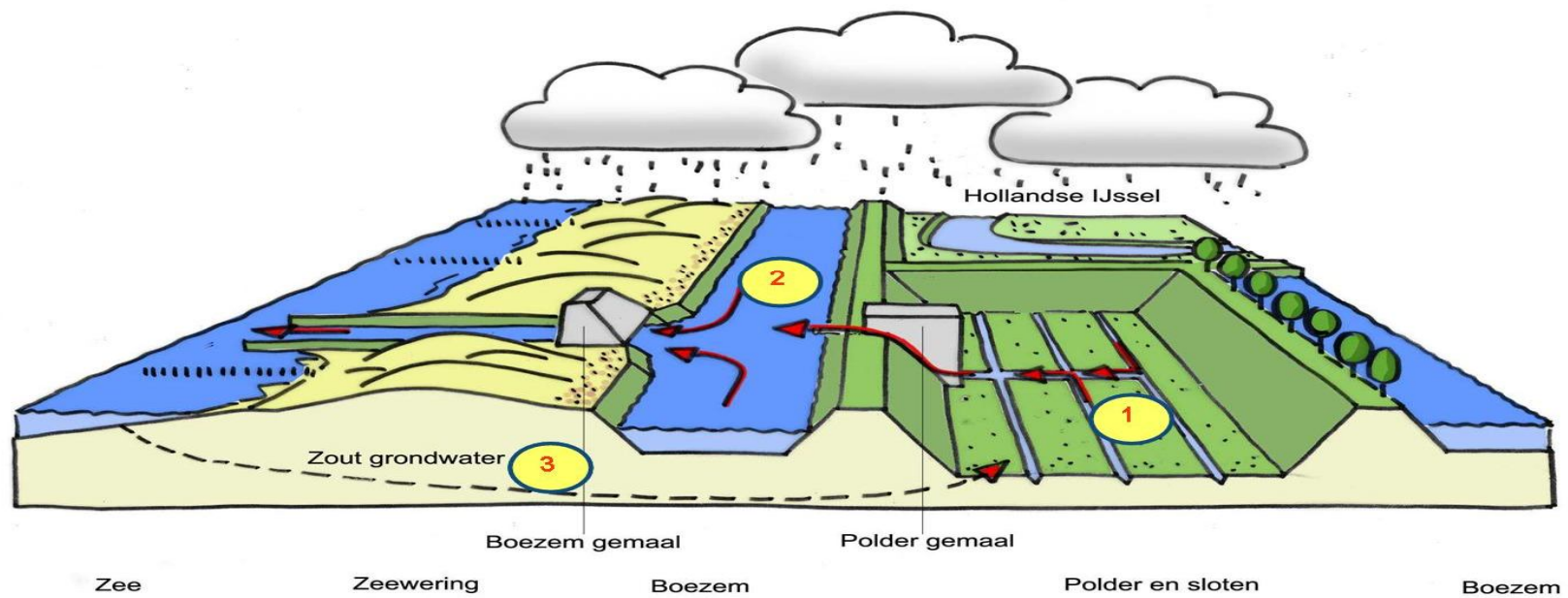
Watermanagement since 1255

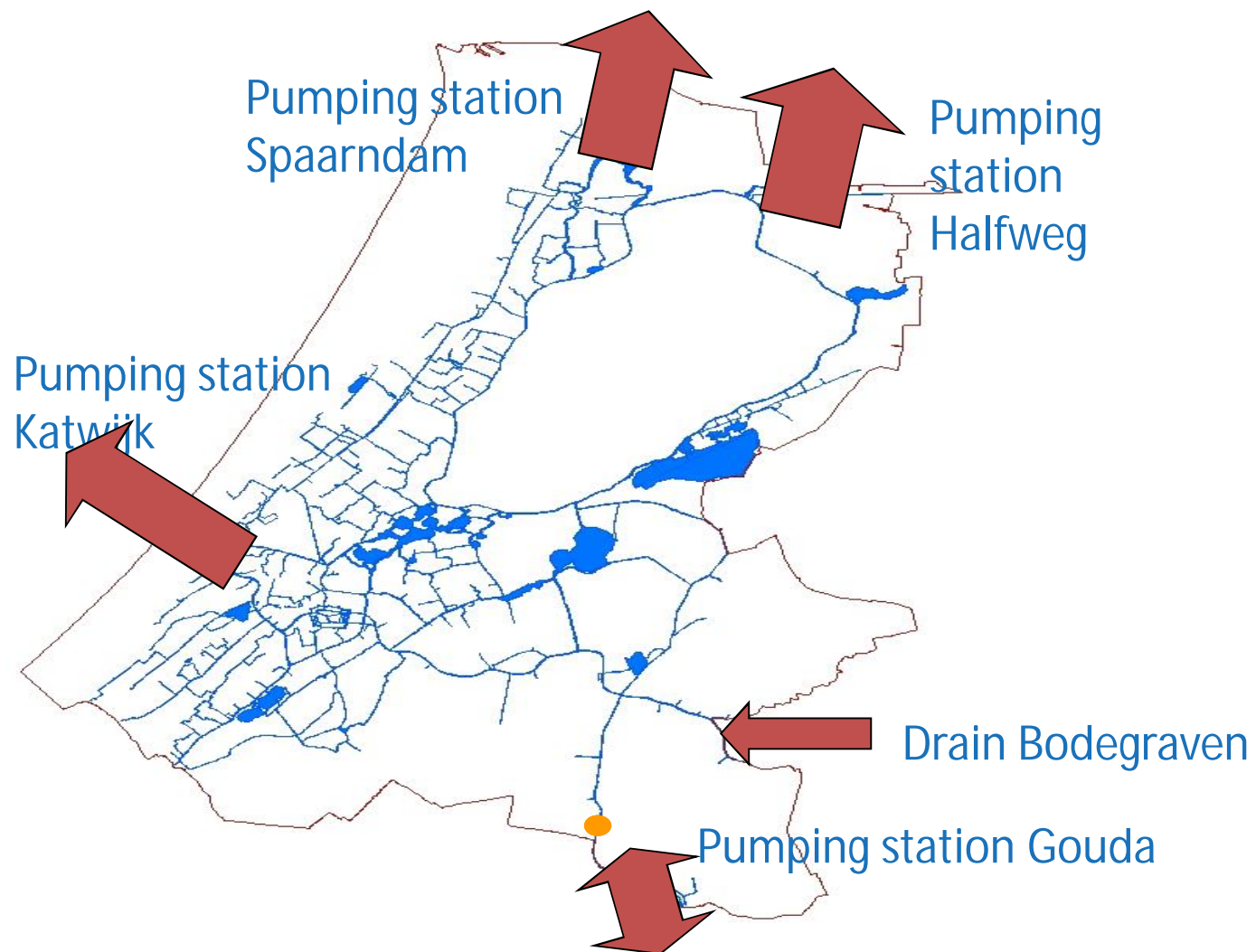


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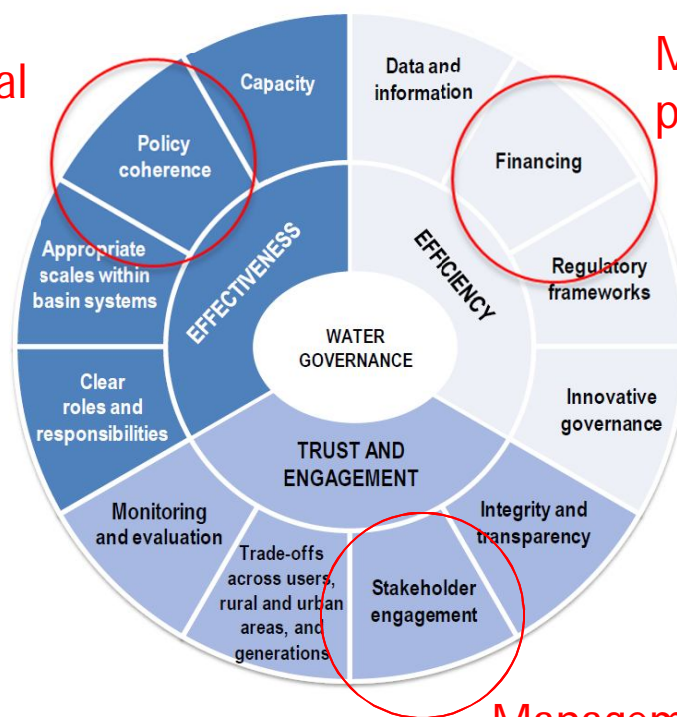
Watermanagement 2018





OECD principles on Water Governance

Management political
process



Management financial
process

Management
creative process



Hoogheemraadschap van
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Financial process: flood protection programmes



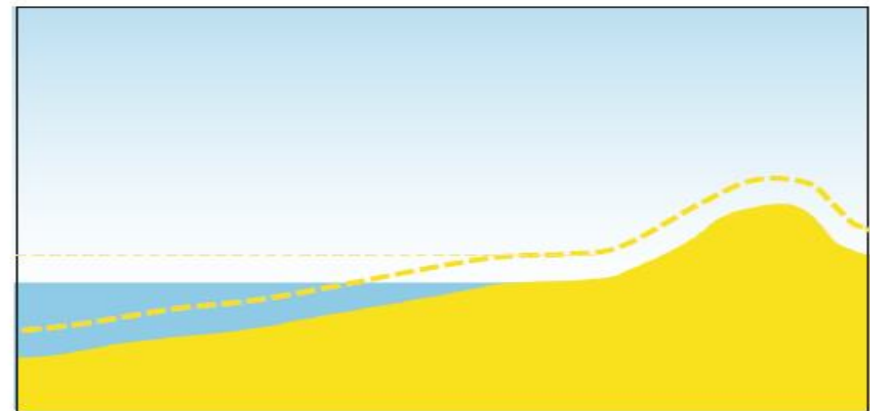
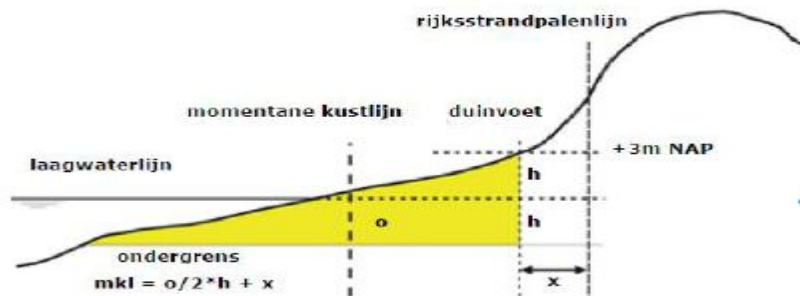
Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

| Current programs: | Time period | Budget |
|-----------------------------|---------------|---------------|
| • Maaswerken | : 1997 – 2020 | |
| • Room for the River | : 2006 – 2015 | € 2,3 billion |
| • HWBP-2 | : 2007 – 2017 | € 3,2 billion |
| • Actual HWBP | : 2018 – 2023 | € 1,9 billion |

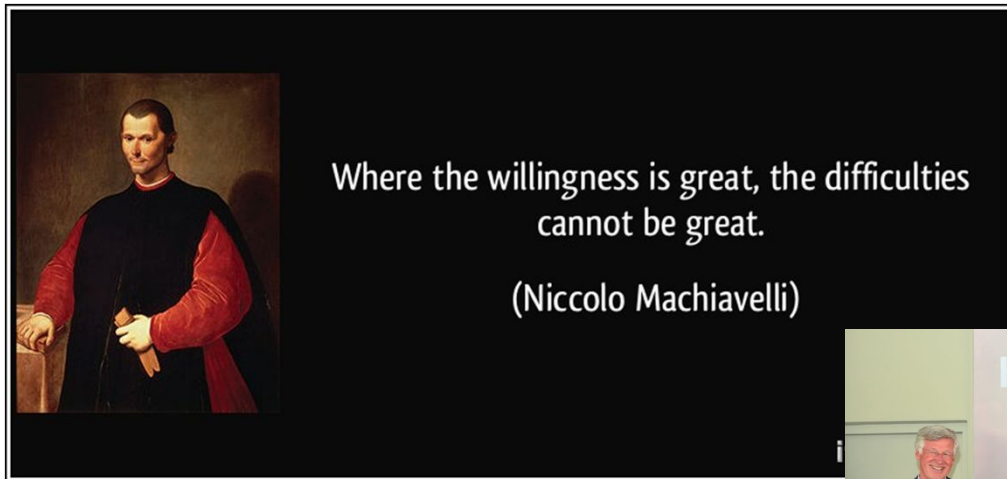


Coastal erosion management

- Standard 1991 = basic coastal line
- Standard 2001 = BCL+ sea level development

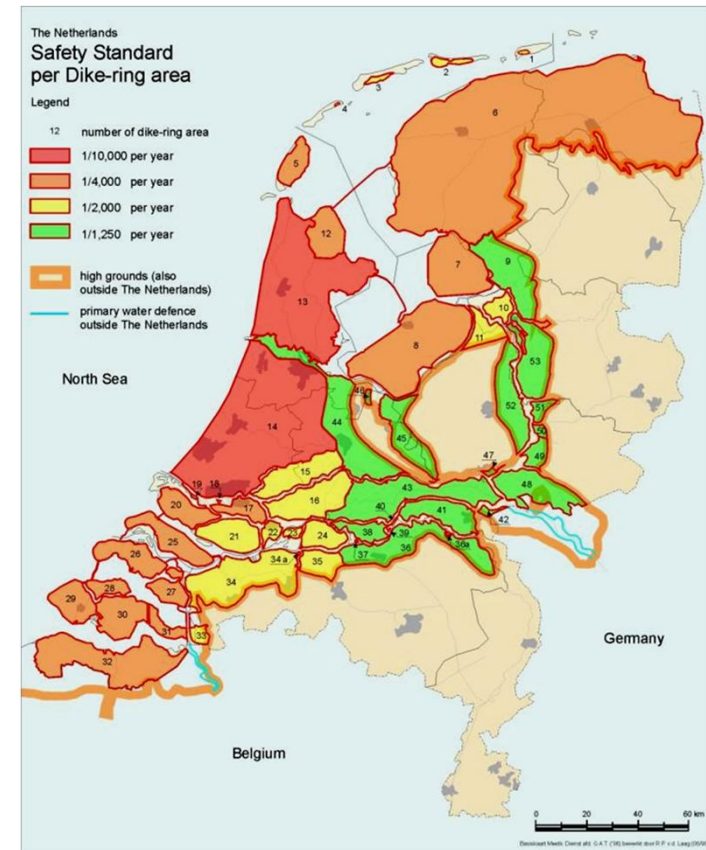
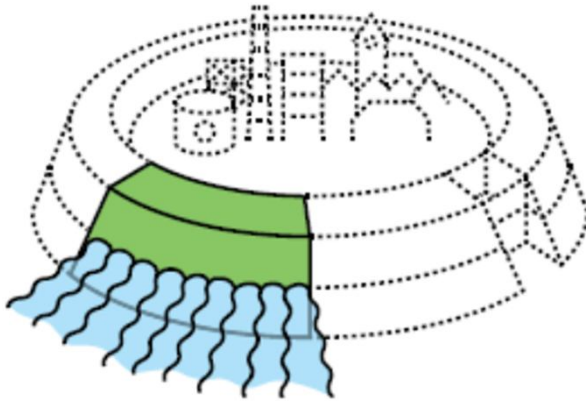


Management political process



23 februari 2011

Floodriskmanagement Standards 2008



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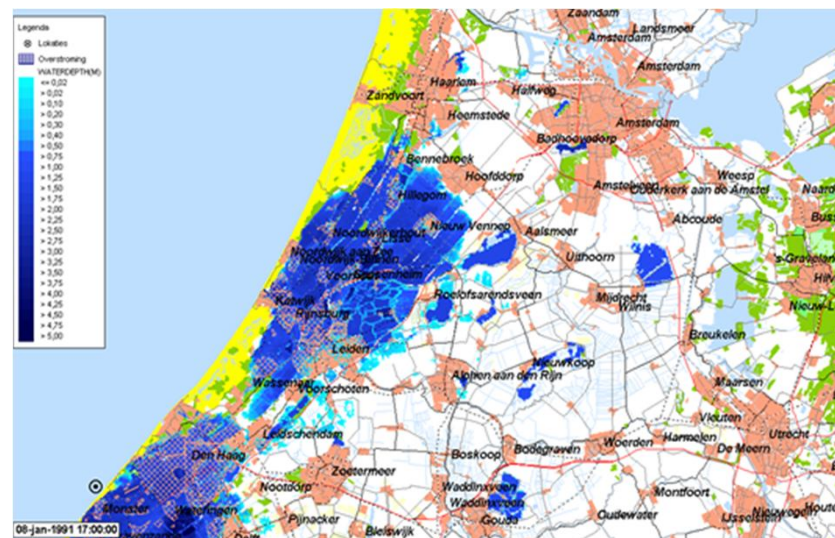
New Dutch norms: risk based approach

Individual risk of dying by flooding of 1:100.000

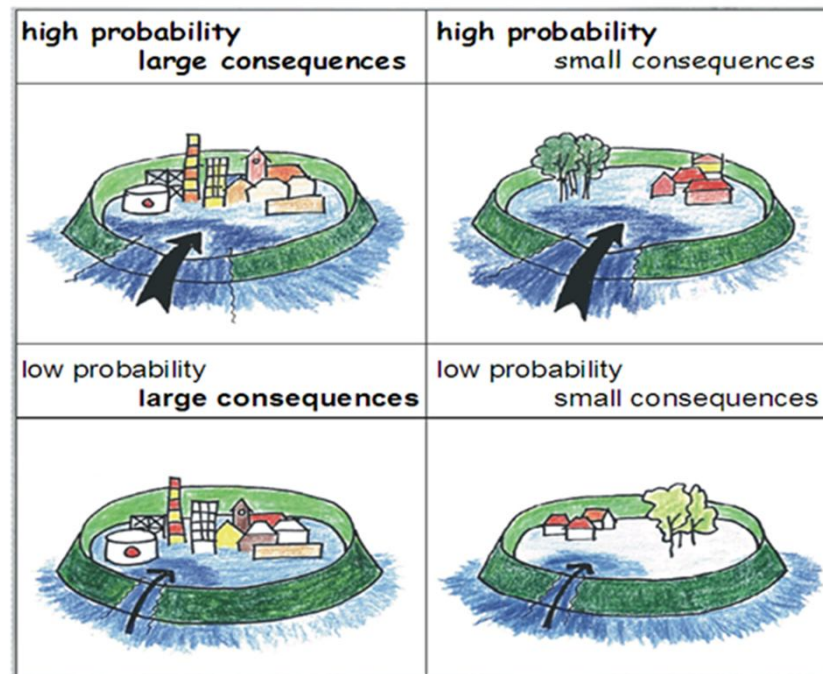


Flooding Zeeland 1953

Risk = Probability x Consequences



Management of risks



Flood-risk management: 3 layers

1. Prevention
2. Spatial planning
3. Disaster management



Floodriskmanagement



National
programm

Check every 12
years



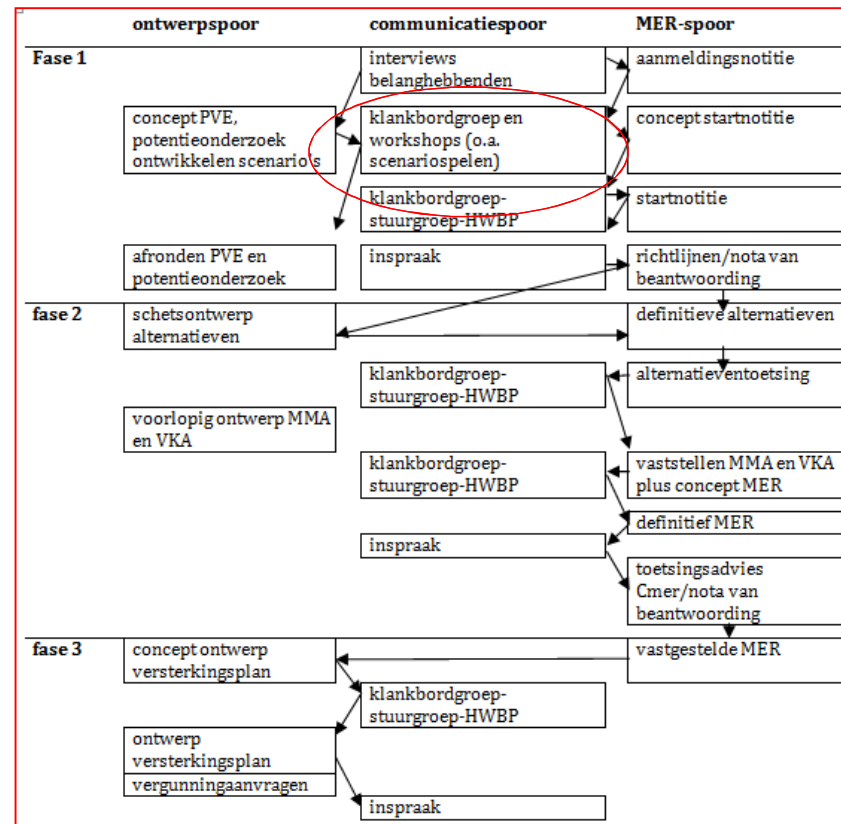
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How do we select the best solution?

- Environmental Impact Assessment
 - Safety/sustainability
 - Living- and social environment
 - Green areas (incl. archaeology and cultural history)
- Social cost-benefit analysis
- Management creative process

Process scheme:

1. design - track
2. communication - track
3. EIA - track

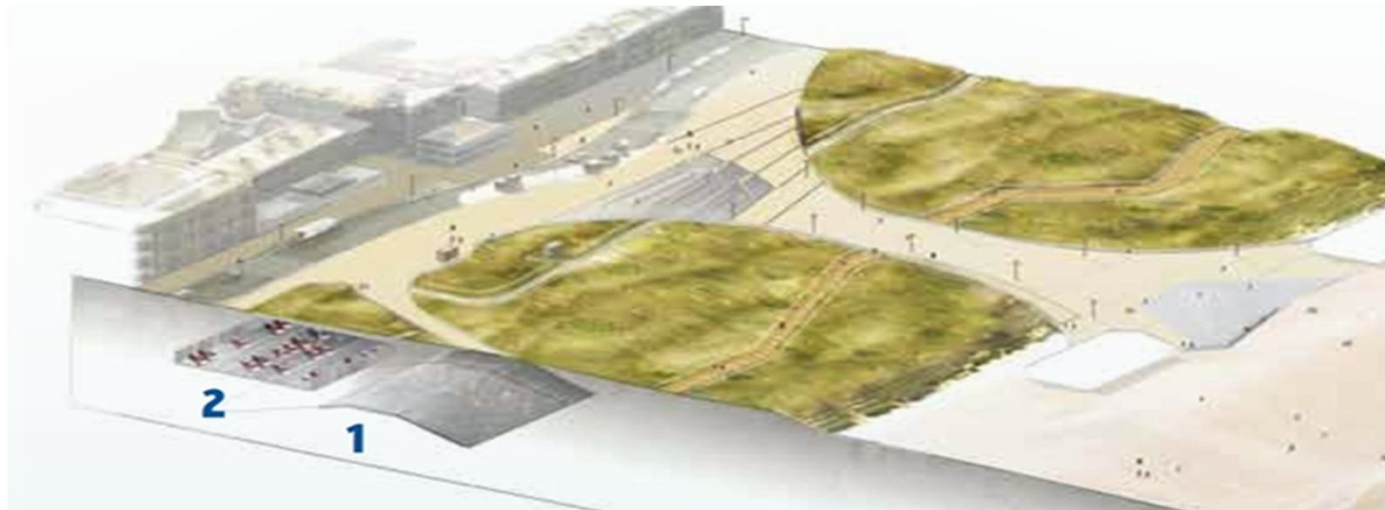


Management creative process

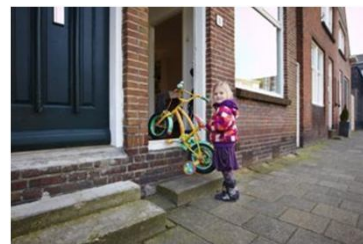
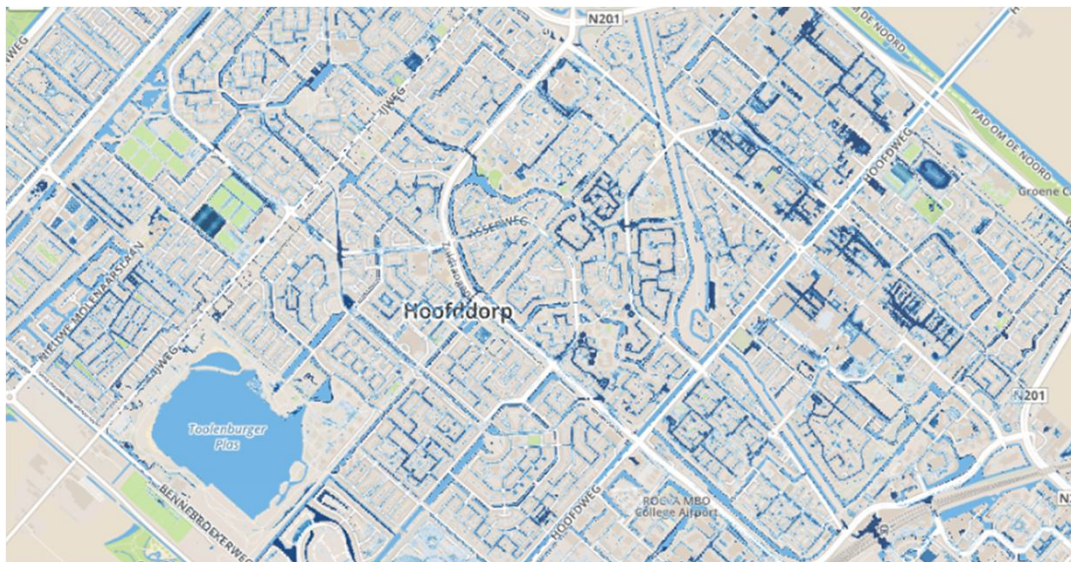


- Stimulate cooperation between stakeholders
- Find solution with support
- No words but images
- Negotiation between stakeholders

Example coastal protection integrated design Katwijk

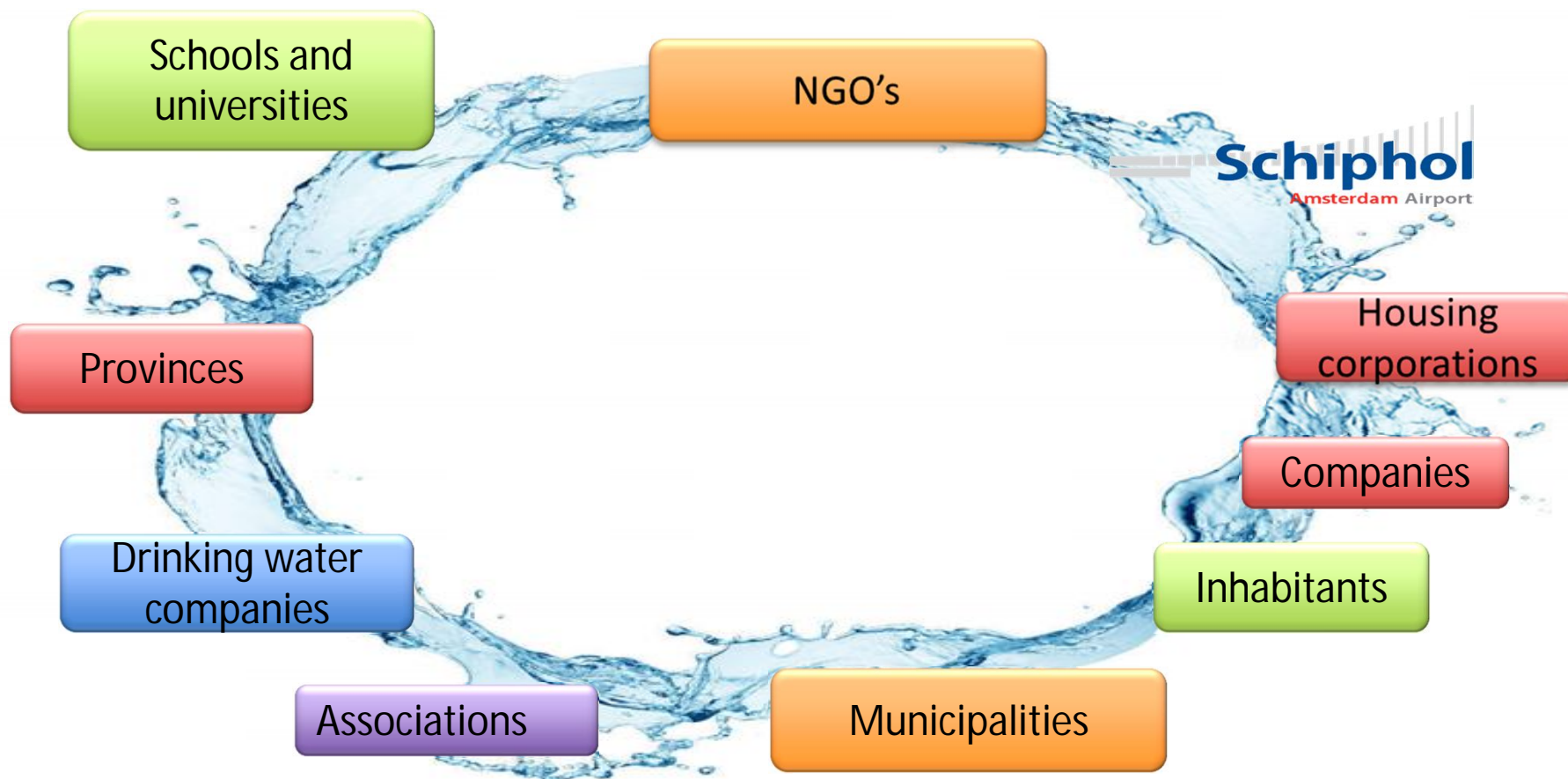


Climate stresstest 2018



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Collective challenge





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