

Sustainable Water Management in the Netherlands

Luit-Jan Dijkhuis
Directorate General of Water Affairs









Contents

Current policies

Climate change water scarcity and droughts

Policy shift and waterplan 2009

Policy development on water scarcity and droughts

- 1976 Most severe water scarcity and droughts event in Dutch history
- 1985 Policy for present water scarcity and drought management
- 2003 Renewed attention for water scarcity and droughts
- 2009 National Waterplan

Priority list water scarcity

Category 1

Safety and prevention of irreversible damage

1. *Stability of dikes*
2. *soil compaction (peat)*
3. *Nature (connected to soil characteristics)*

precedes

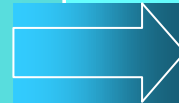


Category 2

Public utilities

1. *Drinking water*
2. *Energy production*

precedes



Category 3

Small-scale use with high added value

- *Temporary sprinkling of capital-intensive crops*
- *Process water*

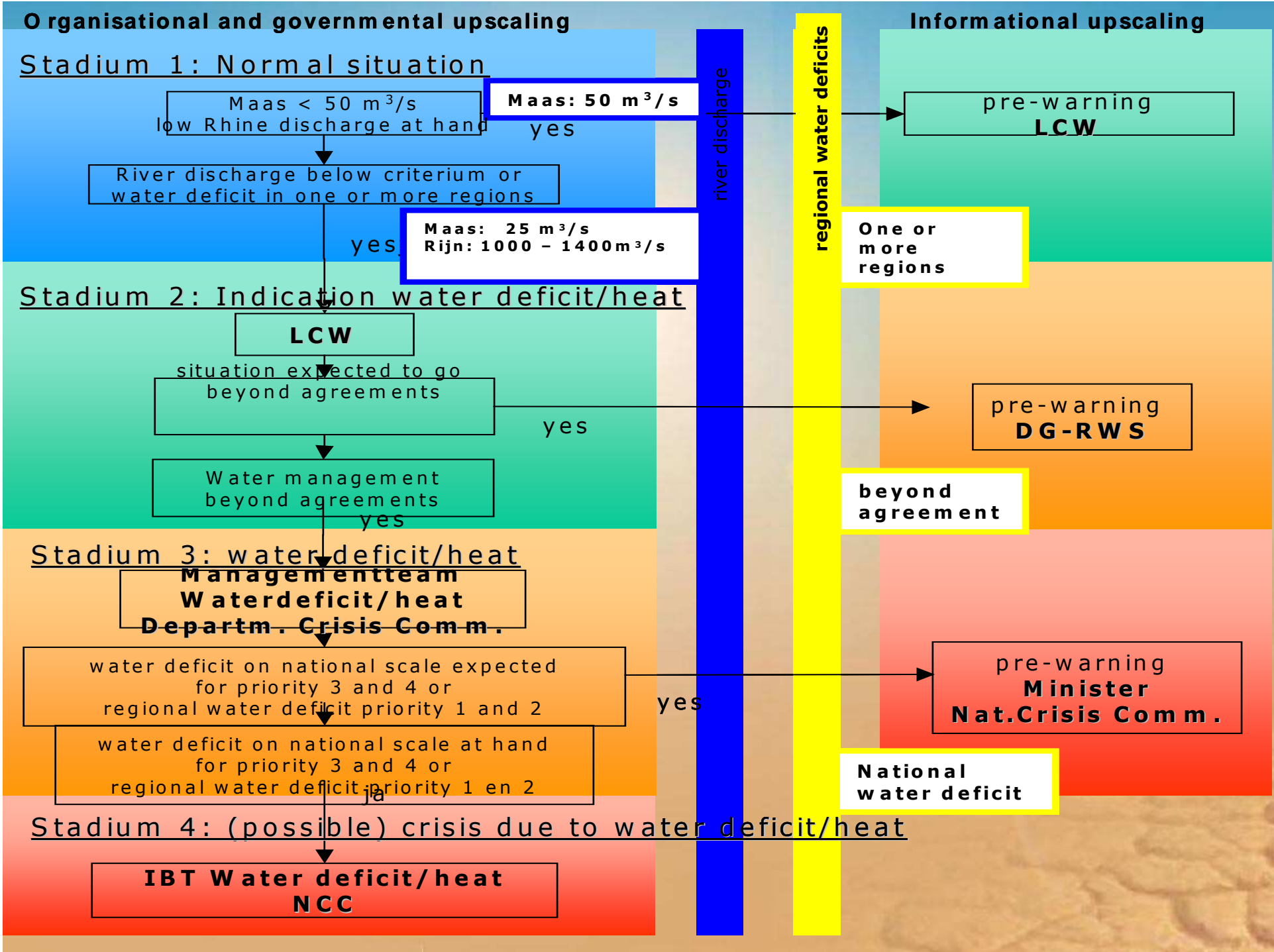
precedes



Category 4

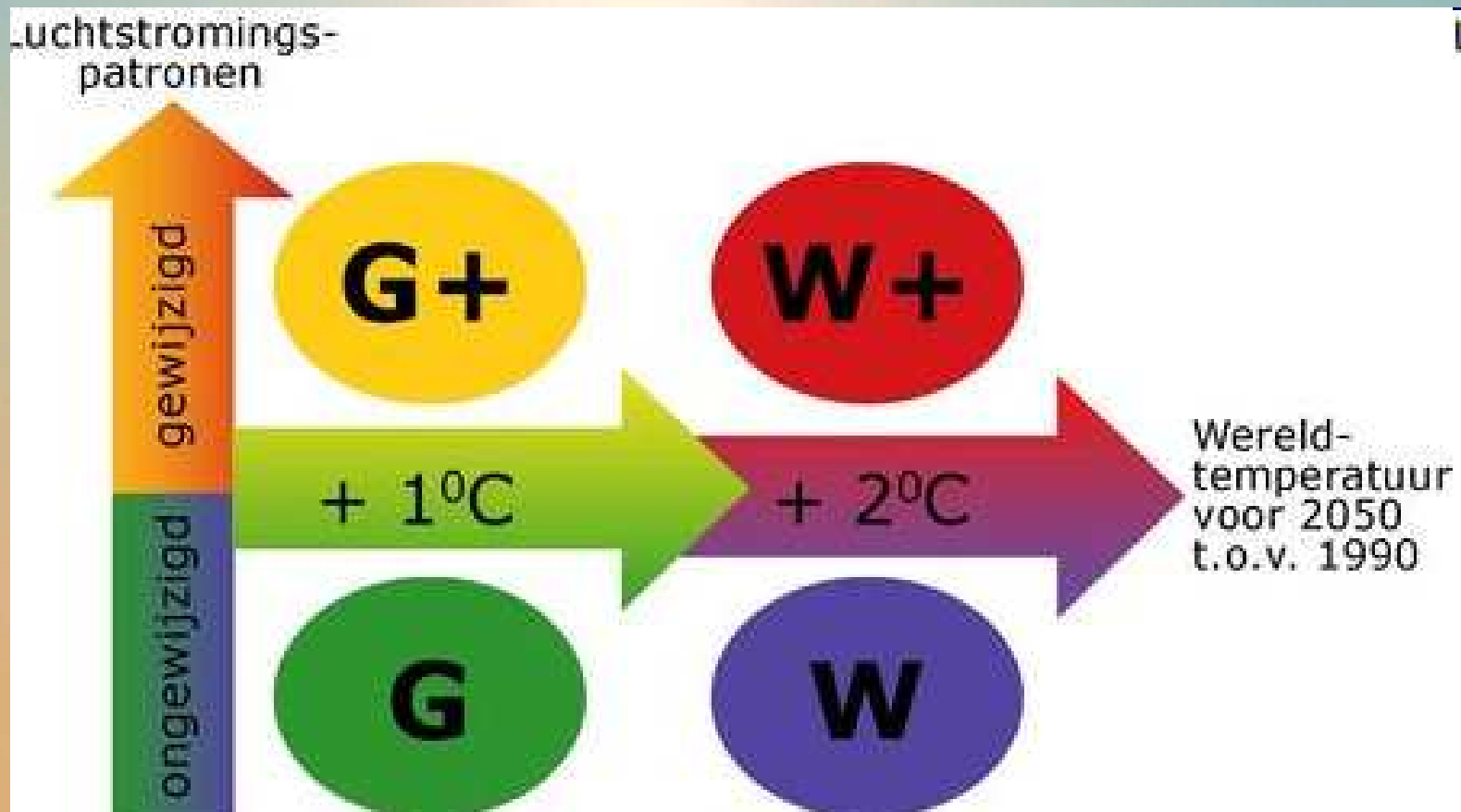
Other uses economic considerations also for nature

- *Shipping*
- *Agriculture*
- *Nature (as long as no irreversible damage is done)*
- *Industry*
- *Recreation*
- *Fishery*

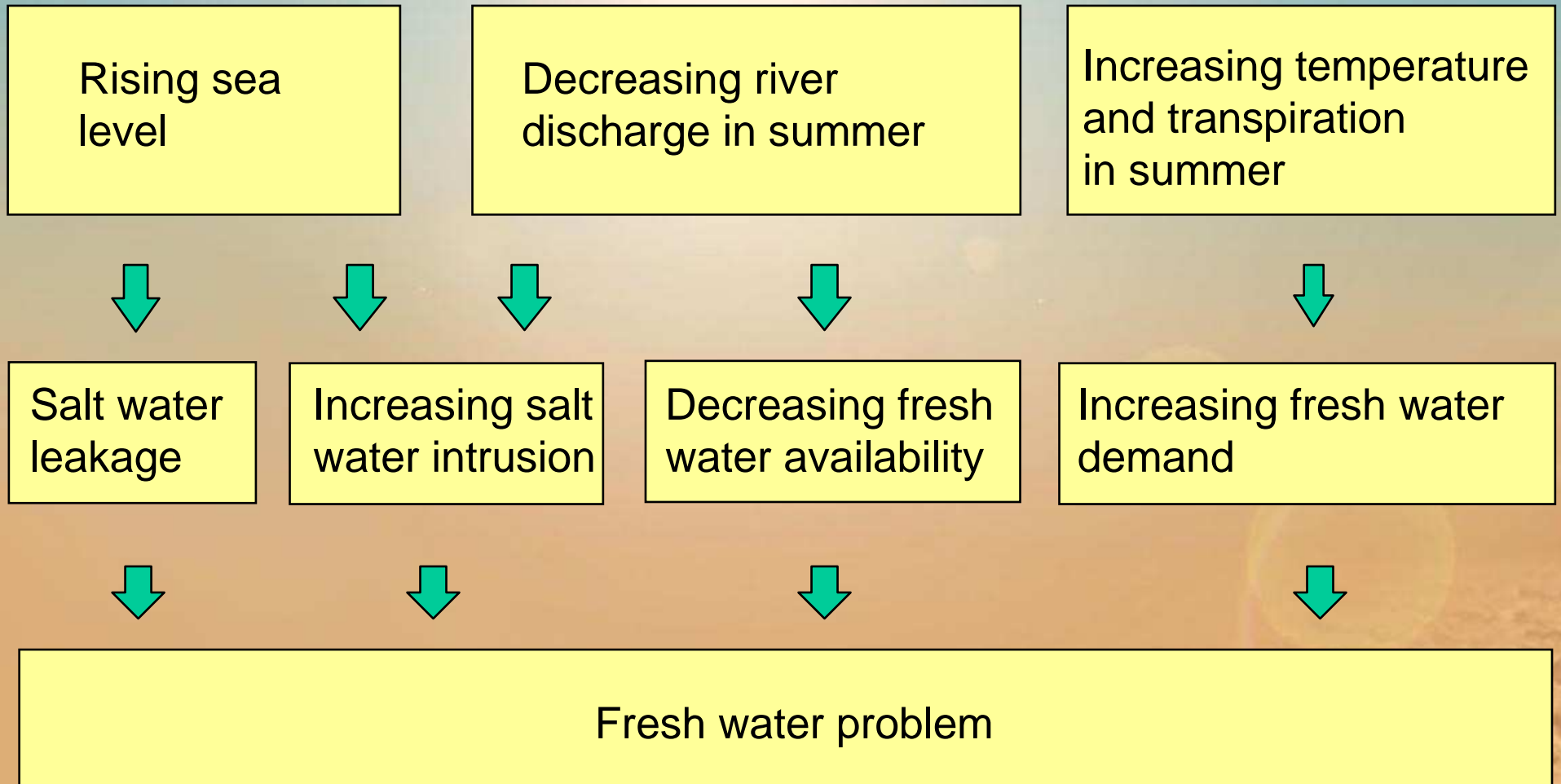


Dutch climate scenario's

based on IPCC climate scenario's



Climate change and impact on water system



Increasing sea levels

Rising sea level

Decreasing river discharge in summer

Increasing temperature and transpiration



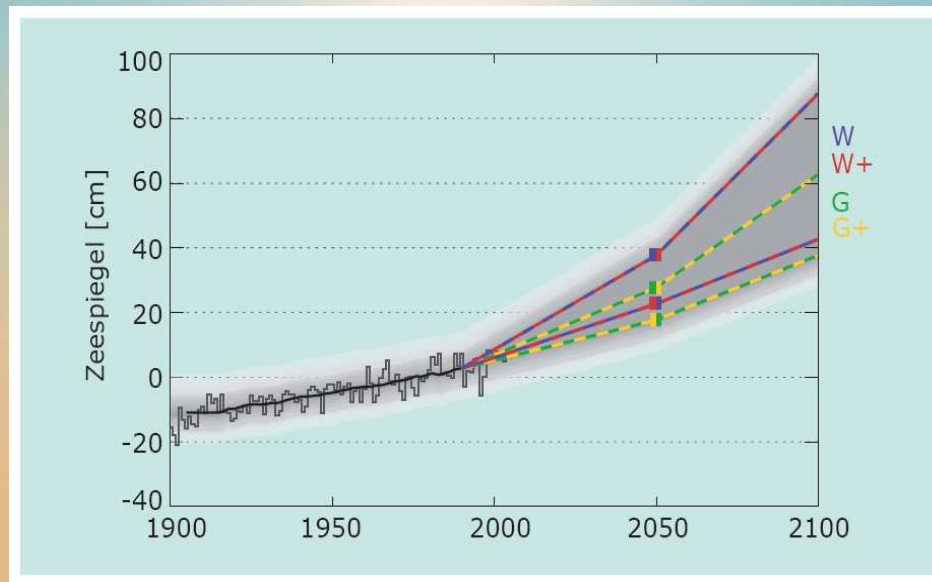
Salt water leakage



Fresh water



Rising sea level 1900-2100



Decreasing river discharges

Rising sea level

Decreasing river discharge in summer

Increasing temperature and transpiration



Salt water leakage



Fresh water



Decreasing river discharge in summer



Increasing water temperature

Rising sea level

Decreasing river discharge in summer

Increasing temperature and transpiration



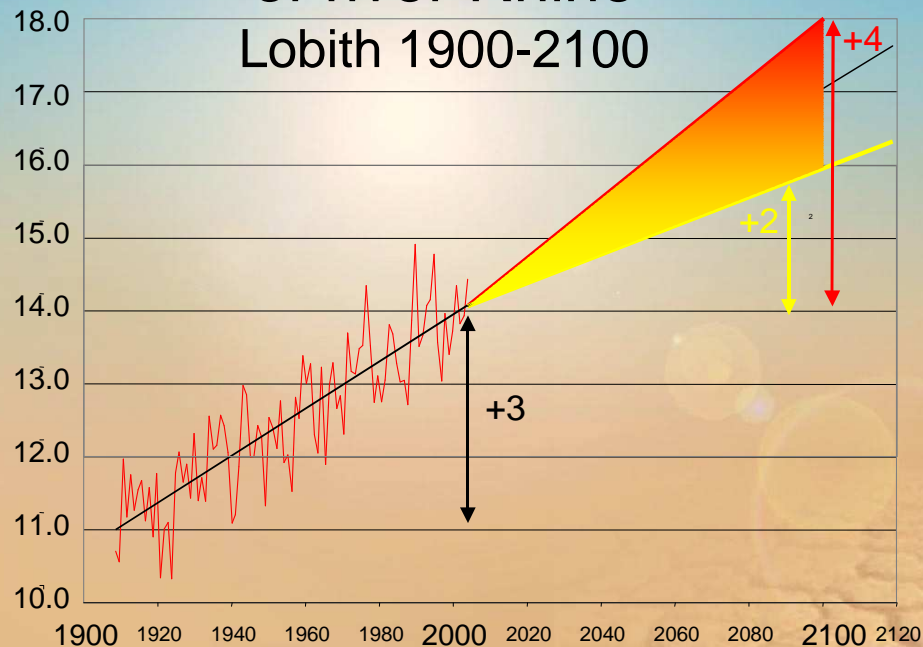
Salt water leakage



Fresh water

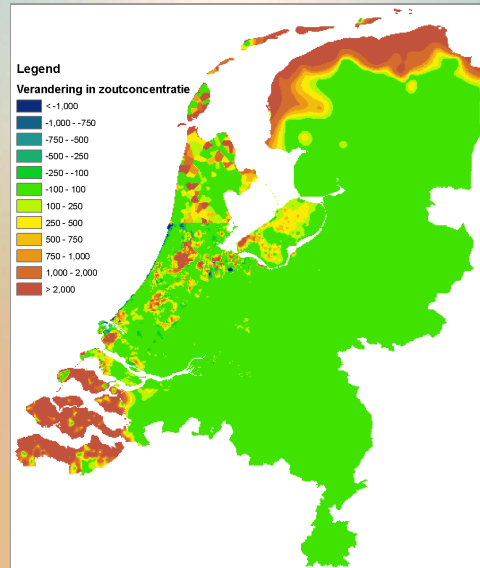


Increasing water temperature of river Rhine
Lobith 1900-2100



Increase

Increasing chlorine concentration
(2050)



Rising sea level

ture

Salt water leakage

Increasing salt water intrusion

Decreasing fresh water availability

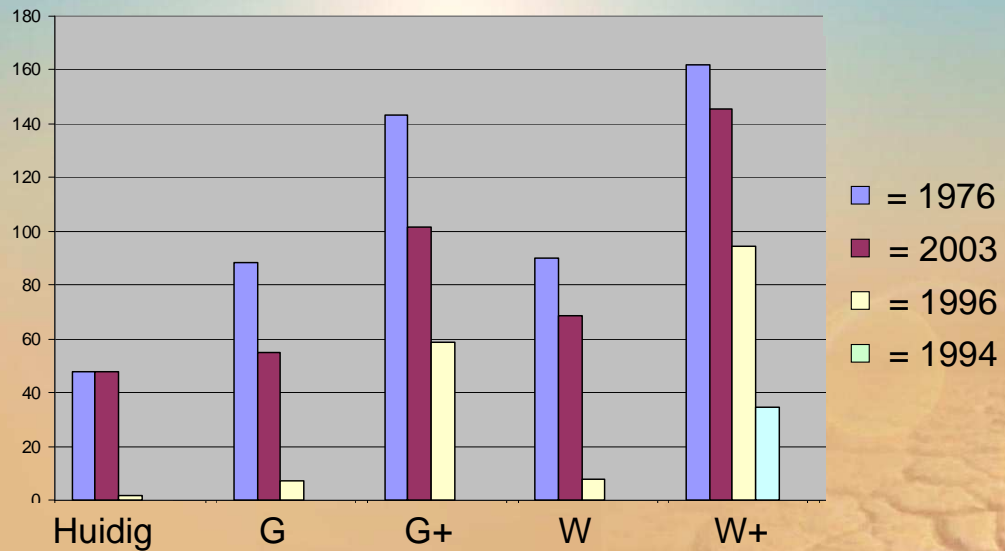
Increasing fresh water demand

Fresh water problem

Salt water intrusion Nieuwe Waterweg

Gouda Hollandsche IJssel, 2050

fresh water supply not possible (days/year)



Rising sea level



Salt water leakage

Increasing salt water intrusion

Decreasing fresh water availability

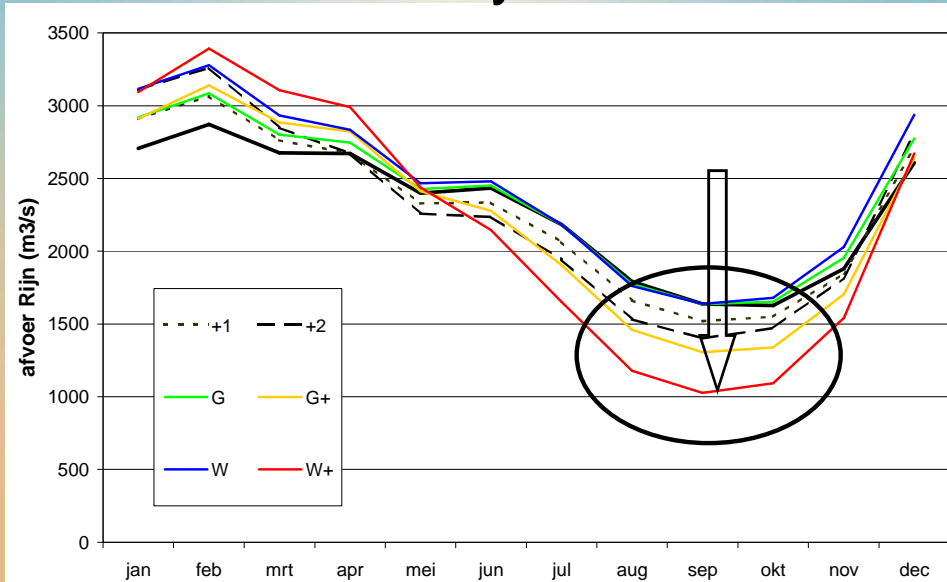
Increasing fresh water demand



Fresh water problem

Decreasing

Decreasing fresh water availability in 2050



Rising sea level



Salt water leakage

Increasing salt water intrusion

Decreasing fresh water availability

Increasing fresh water demand



Fresh water problem

Conclusions

- Fresh water availability under pressure
- Before 2050 exceeding critical chloride concentrations
- Summer 2003 will be normal in 2100
- National water balance will be negative in 2100

Adaptation to Climate Change



Talenti

Cathedral of
Florence
Bell Tower

Pisano

Giotto

Strategies

- Water users anticipate on water scarcity
- Retaining and storing fresh water in winter
- Measures in water system
- Desalination

Thank you for your attention

