



## Room for Rivers in the Netherlands

River flood management & planning kit

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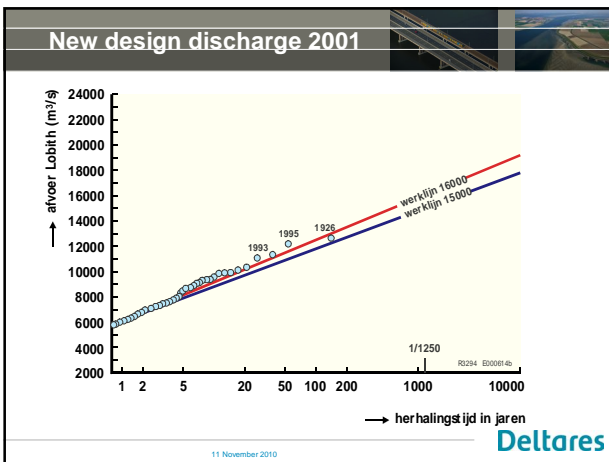
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### Flood protection in NL

- Flood Protection Law (1996):
  - safety levels (probabilities)
  - every 5 years, evaluation hydraulic design parameters (design discharges, etc.)
  - every 5 years: check infrastructure, based on updated hydraulic design parameters
  - report to Parliament

2001: new round: two flood events made Rhine design discharge go up from 15.000 to 16.000 m<sup>3</sup>/s

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### A first step: Room for Rivers

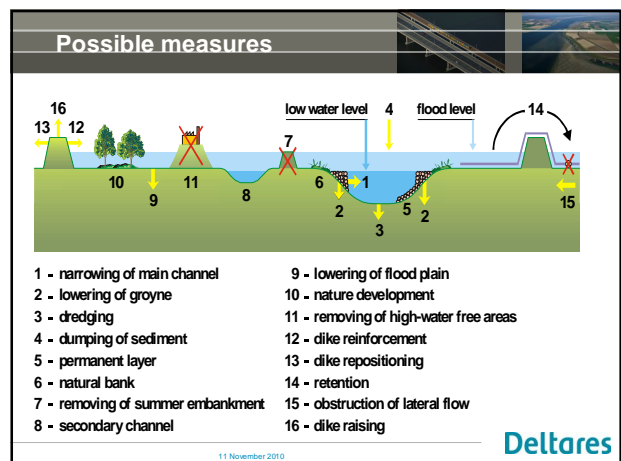
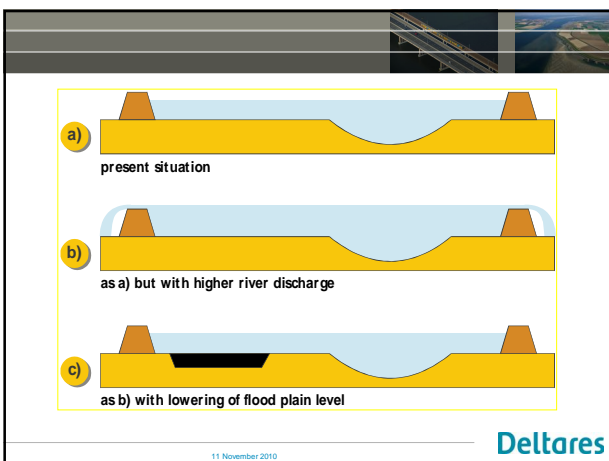
Policy: no further dike heightening (only a last resort)  
Instead: make 'room for rivers'

Combination with enhancing natural and cultural landscape values (scenery)

Relatively humble measures

- (no fundamental change of flood risk management strategy; but costs 2,3 G€)

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### Hydraulic effect of measures

Q: excavation of river:

- a) water level effect mainly upstream?
- b) water level effect mainly downstream?
- c) water level effect both up- and downstream?

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### Effect of deepening/ widening river bed

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### Hydraulic effect of measures

Q: detention basin:

- a) water level effect mainly upstream?
- b) water level effect mainly downstream?
- c) water level effect both up- and downstream?

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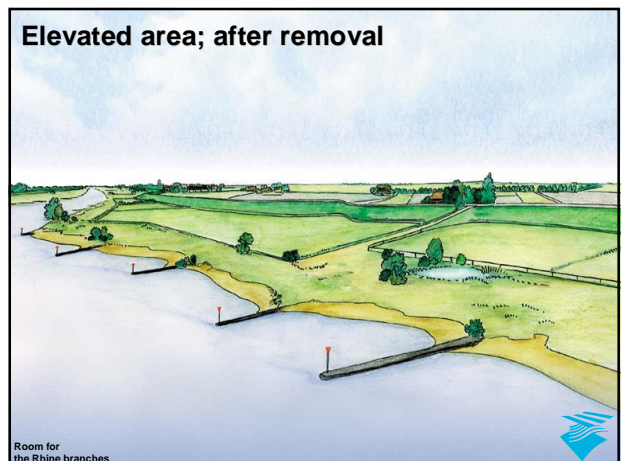


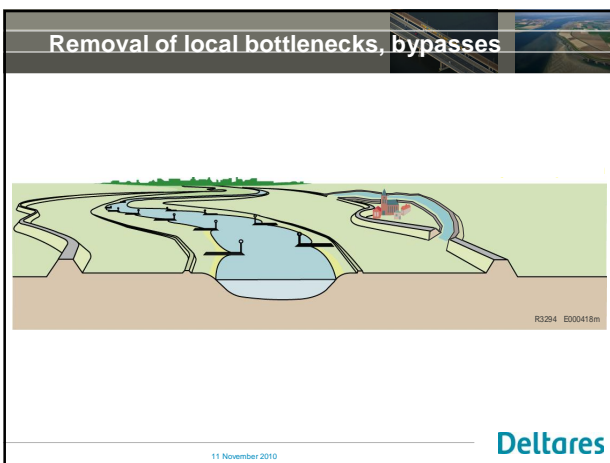
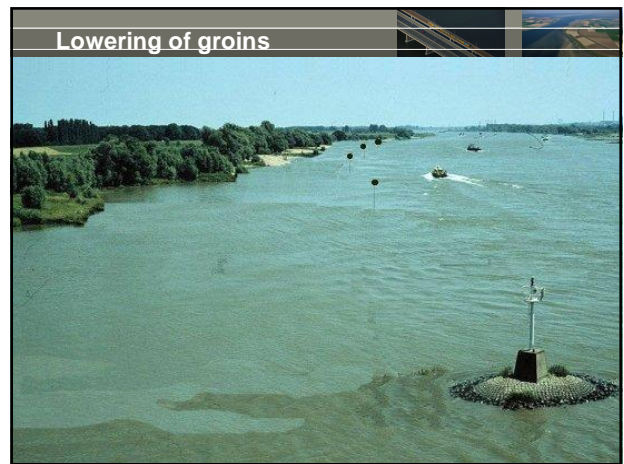
### lowering flood plains

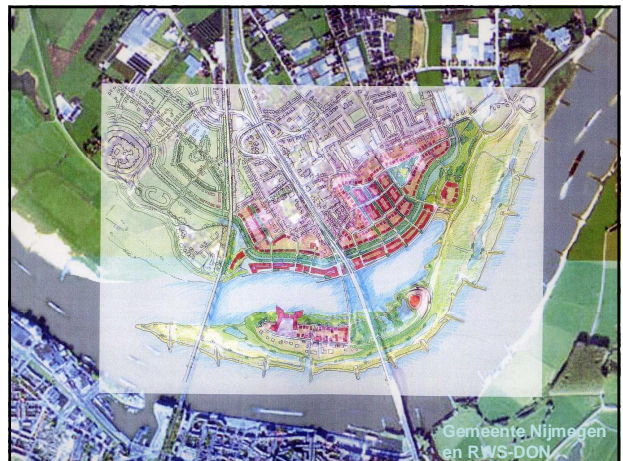
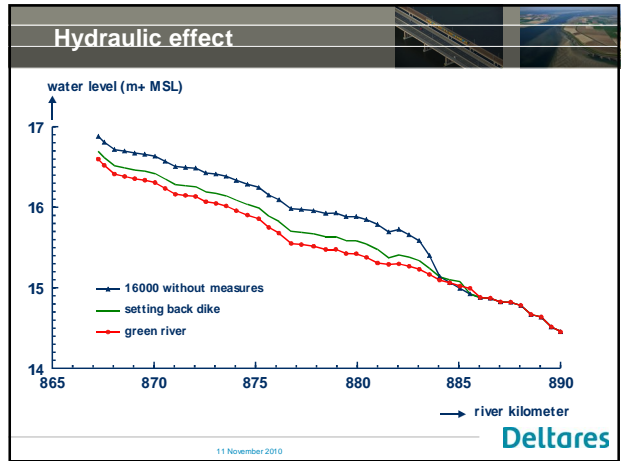
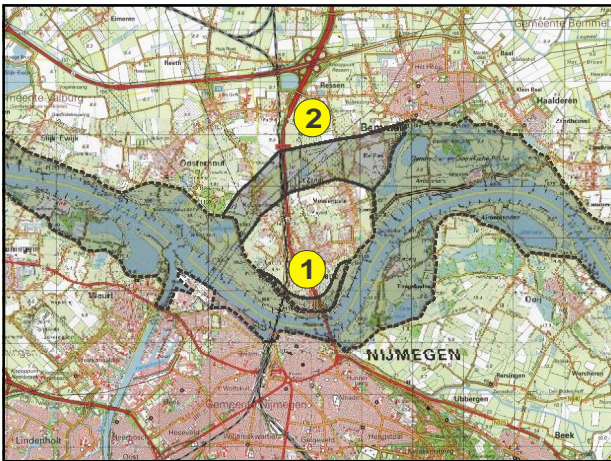
Room for the Rhine branches

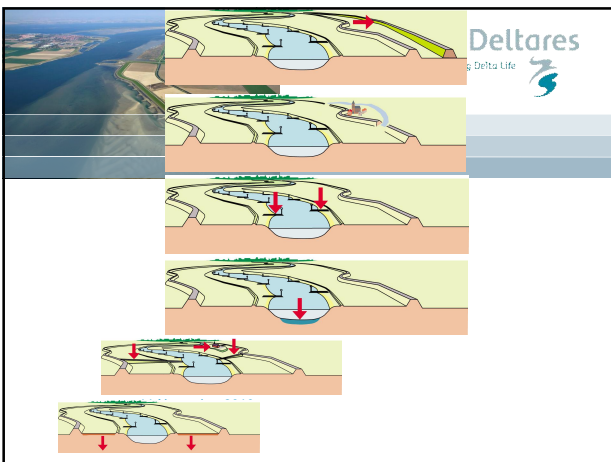
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### Planning Kit Room for the Rivers

700 individual measures identified and analysed in a consistent manner

how to select an acceptable set of about 40 measures out of 700 options that will meet the safety objective ?

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### What does the Planning Kit do?

Shows hydraulic effect and many other effects of individual measures 'from Lobith to the sea'

Schematisch overzicht van de riviertakken.  
Klik op een tak als de muisaanwijzer een pijl is.

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### and further ...

shows hydraulic effects, costs and other effects of combinations of measures

gives visualisations of measures

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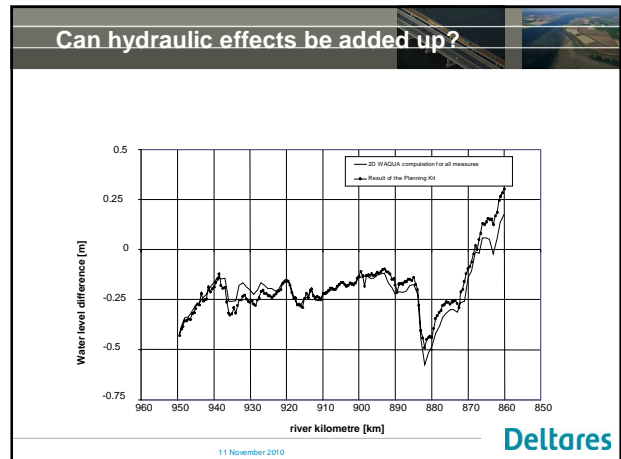


demo Planning Kit



Blokkenoos PKB.Ink


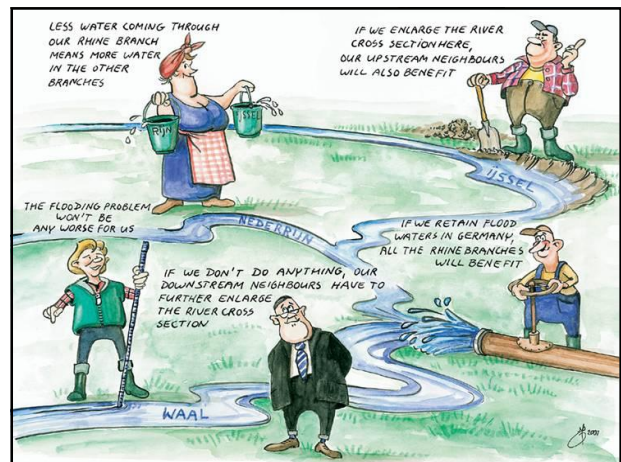
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### What makes the Planning Kit a useful tool?

- forms a common knowledge base
- supports and facilitates learning process
- enlarges knowledge of river basin
- people can check the relevance of their own ideas about flood management
- sense of empowerment: users understand process and science
- simple to use
- complete overview of measures
- easy to distribute among stakeholders


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### Planning Kit download:

[www.wldelft.nl / soft / blokkendoos /](http://www.wldelft.nl/soft/blokkendoos/)

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### Recent developments

- Planning Kit for the Meuse River (Netherlands)
- Planning Kit for the Loire River (France)
- Planning Kit for the comprehensive Rhine catchment
- Water Framework Directive Explorer (water quality, ecology)
- Water Safety 21<sup>st</sup> century: discussion on safety levels in the Netherlands

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