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A photograph of a flooded landscape. In the foreground, a grassy bank curves around a body of water. A small wooden fence stands in the water. The middle ground shows a wide expanse of water with some distant buildings and trees. The sky is blue with scattered white clouds.

**The Floris-2 project
ICLR-Toronto
May 6, 2008
Msc. A.F. Kooij**



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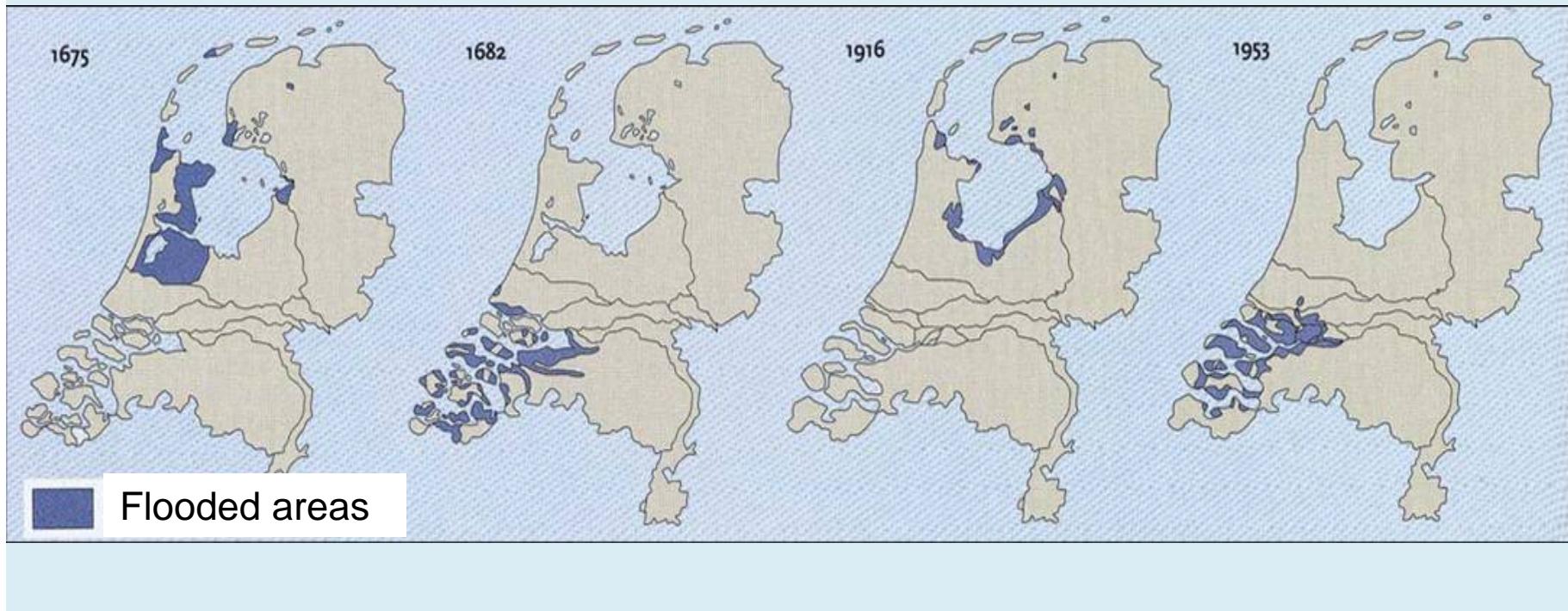
Outline

- Background actual protection policy
- Motivation for a new standard
- Project characteristics
- How does it work
- The end result



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Floodings in the past



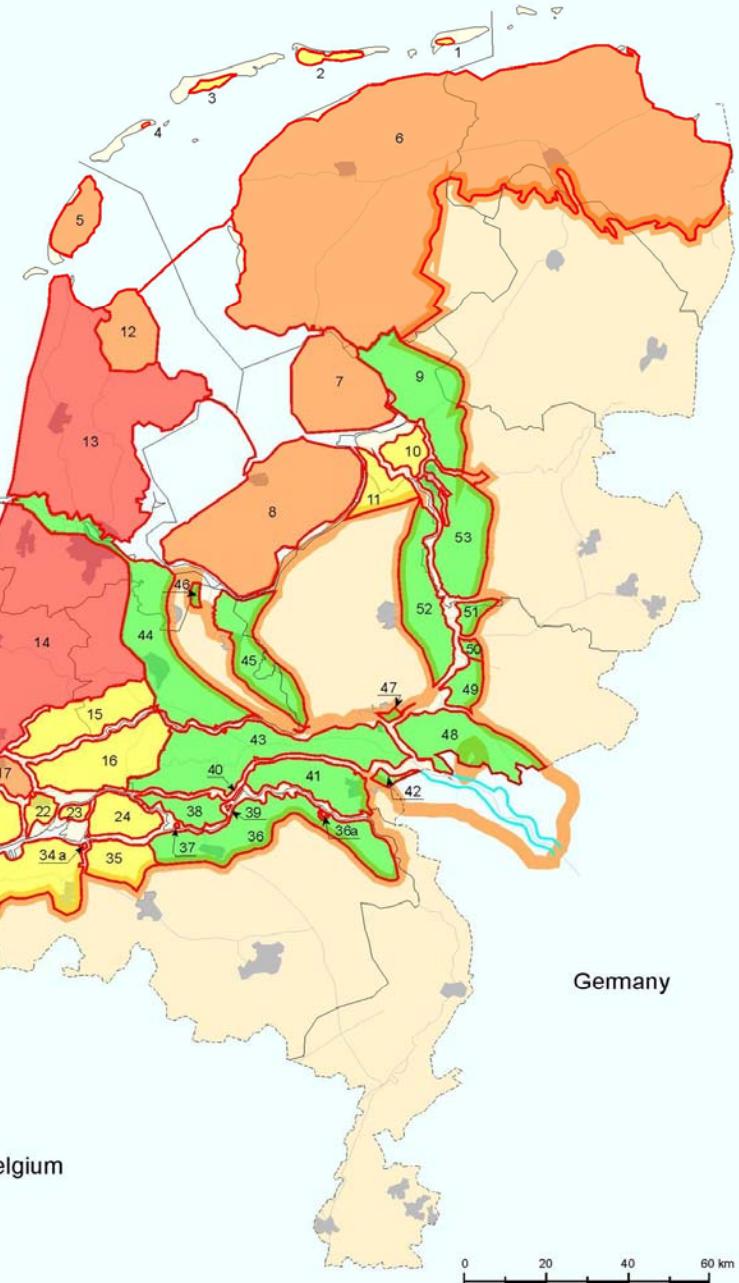
Actual protection standard

The Netherlands Safety Standard per Dike-ring area

Legend

- 12 number of dike-ring area
- 1/10,000 per year
- 1/4,000 per year
- 1/2,000 per year
- 1/1,250 per year
- high grounds (also outside The Netherlands)
- primary water defence outside The Netherlands

North Sea





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Motivation

- Increase in inhabitants and investments
- Development of probabilistic design
- Increase in computer capacity
- Lifecycle of protection standard
- Extreme water levels in 1993 and 1995

Extreme water levels





The Floris Project Approach

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diagnose nu



dijkvak

overschrijdingenkans

diagnose VNK



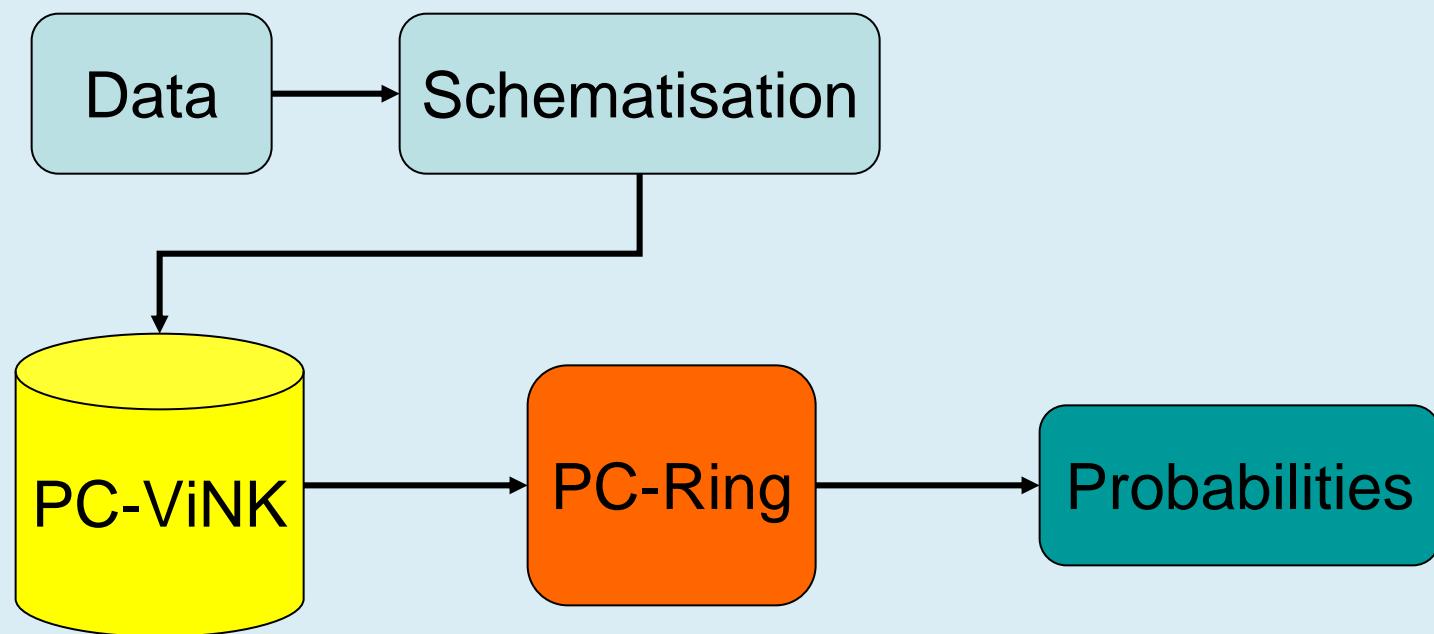
dijkring

overstromingskans én gevolg

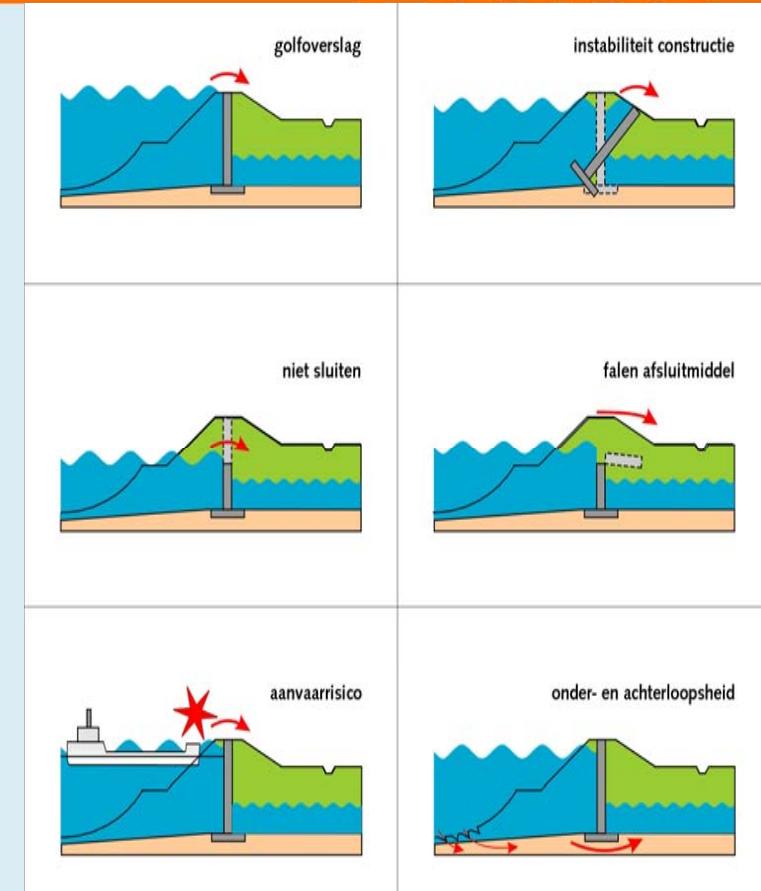
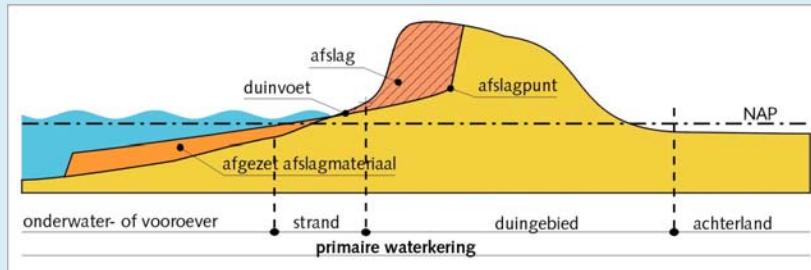
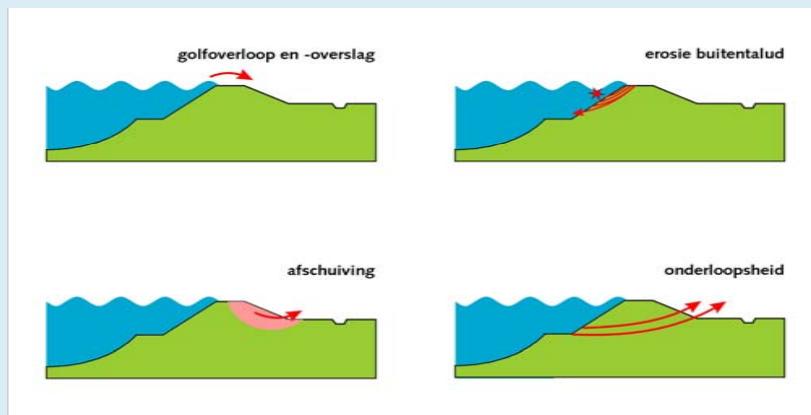


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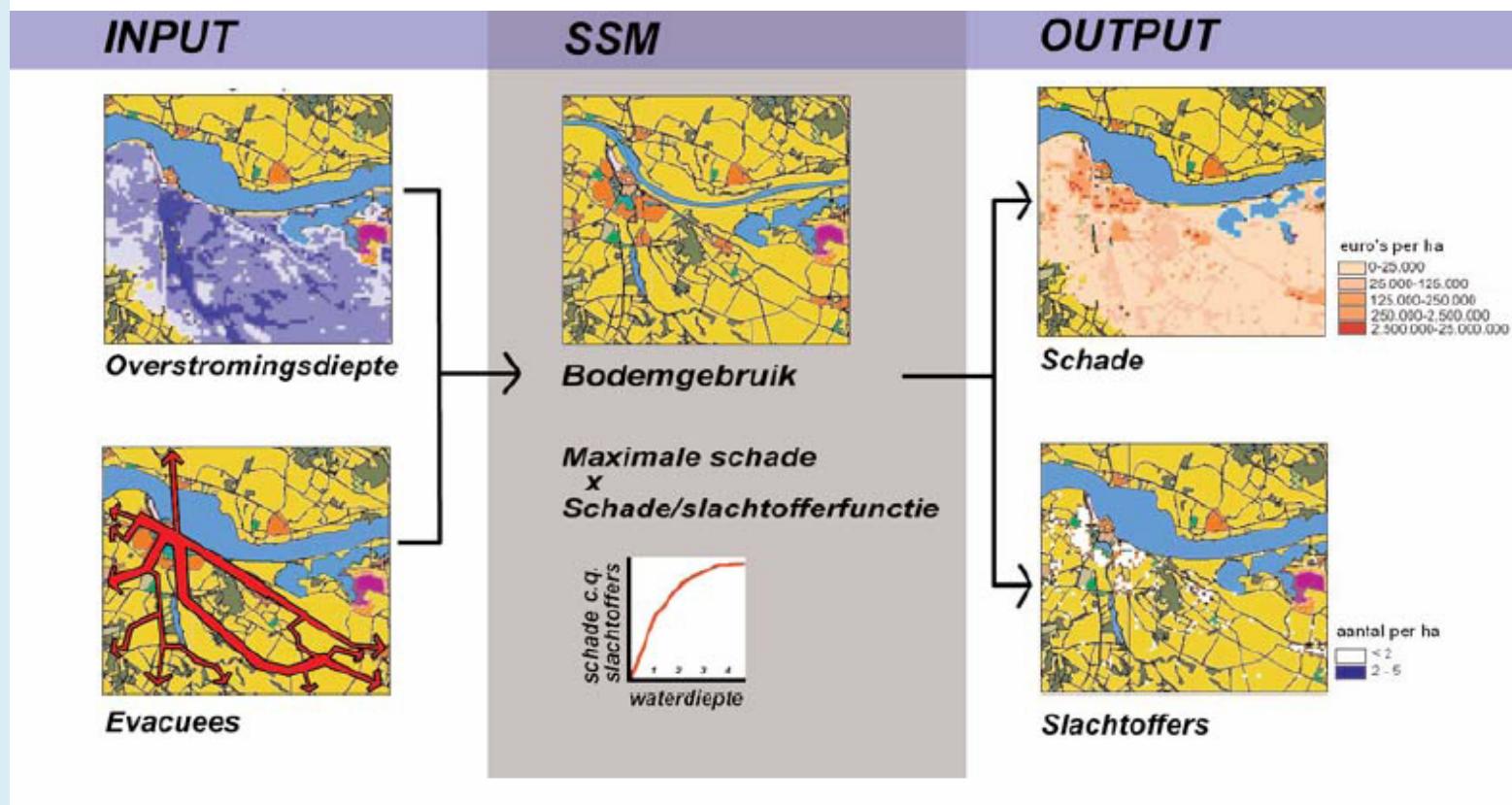
How Does It Work: Probabilities?



Failure mechanisms



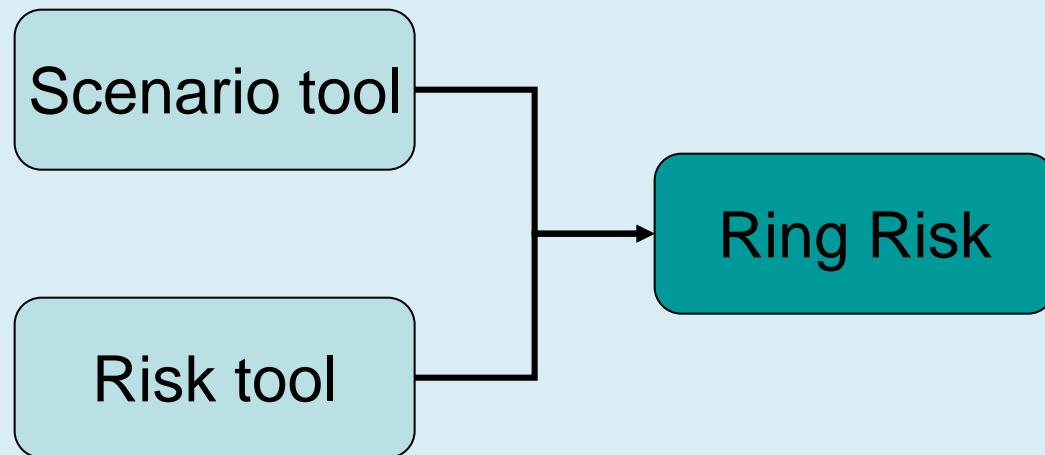
Overview of the effect-module





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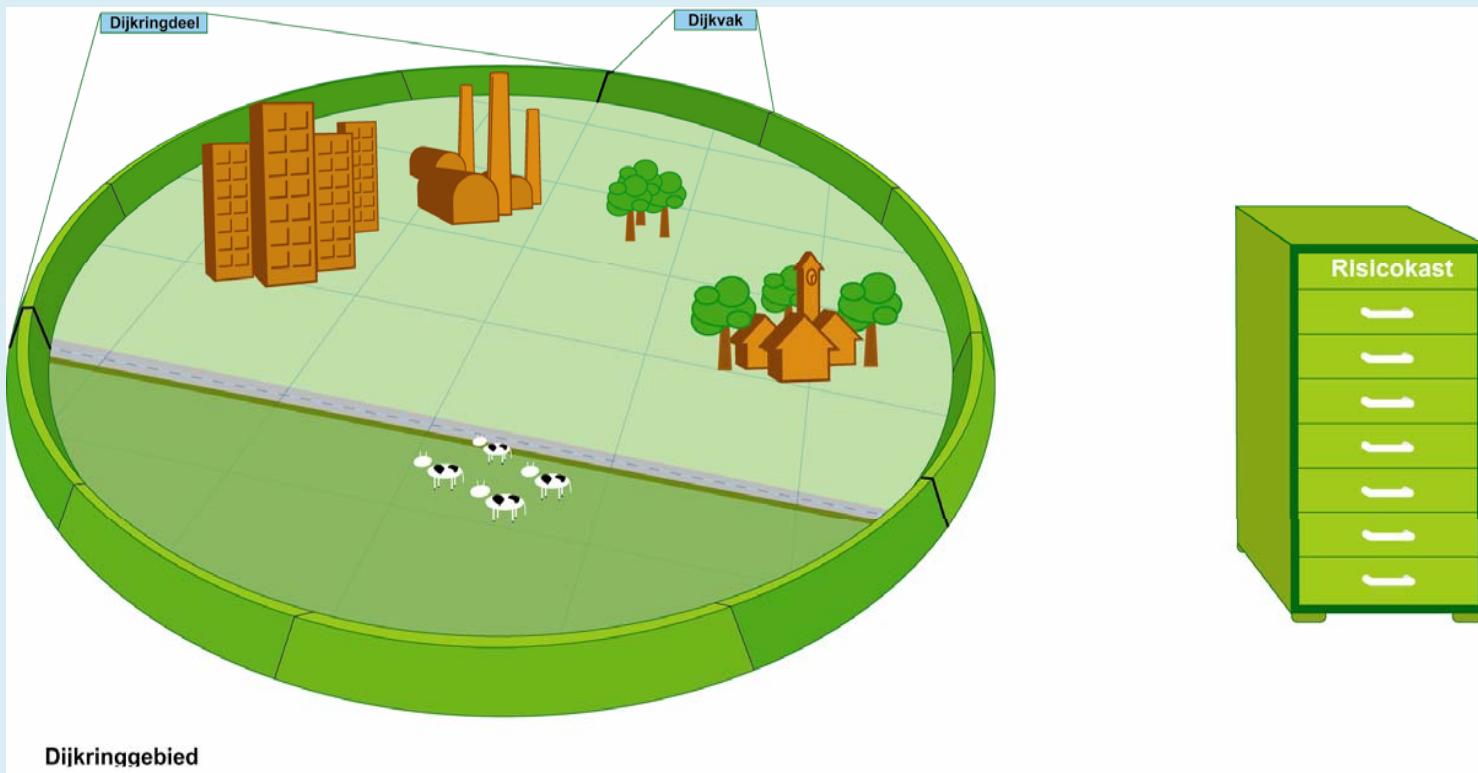
How Does It Work: effects?





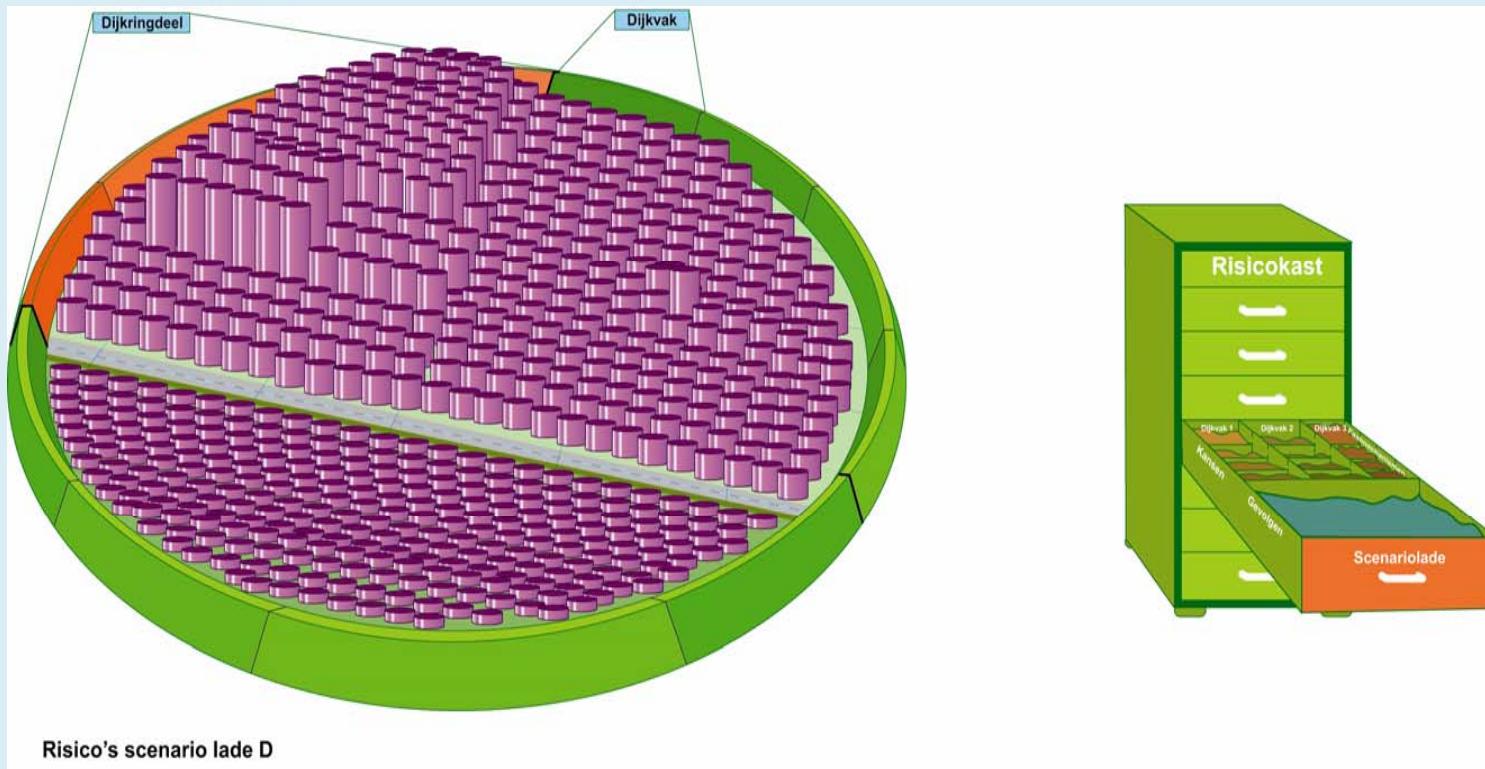
Dike ring area

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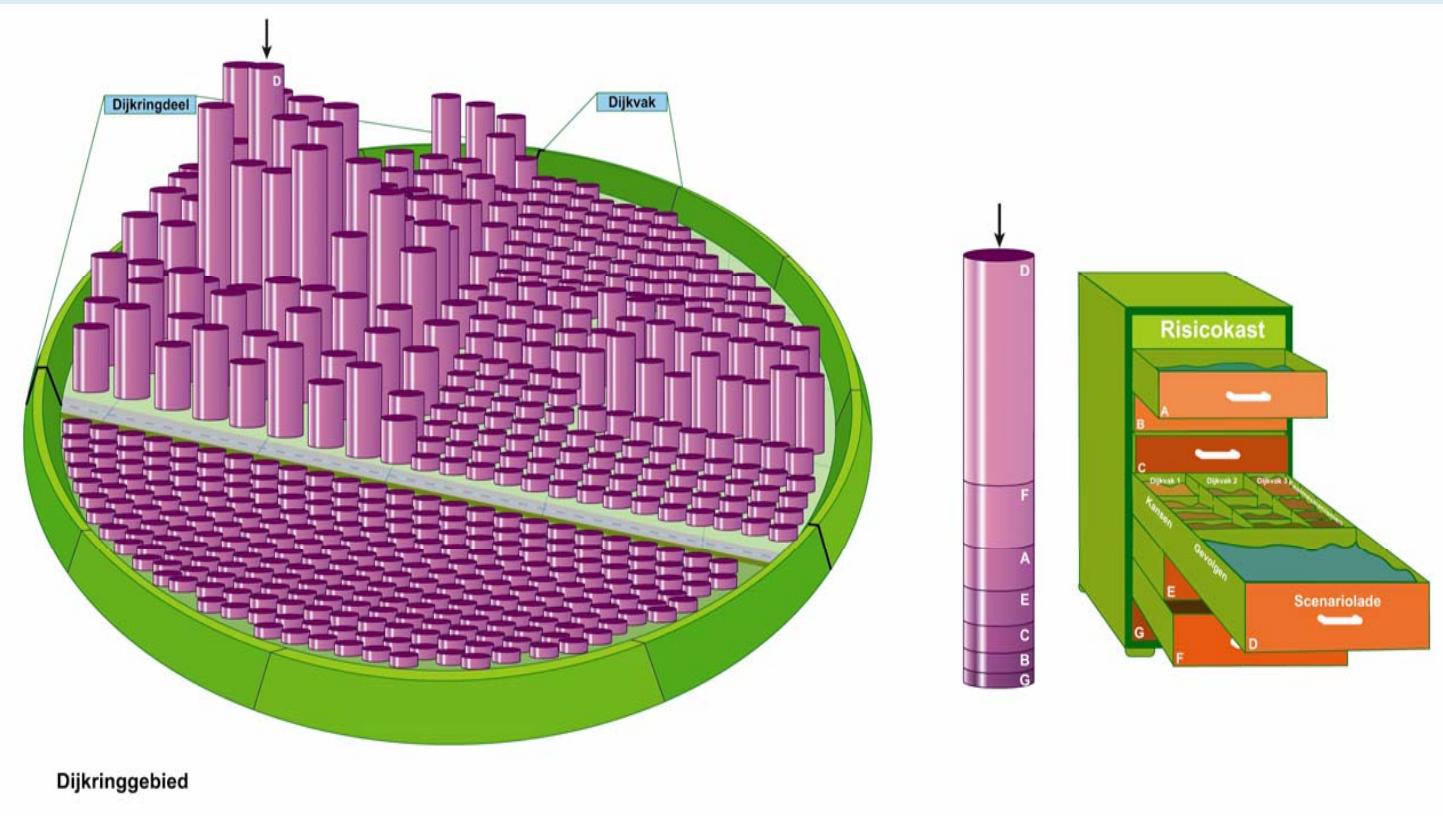


Flooding scenario and risks **VNK2**



All scenario's, total risk

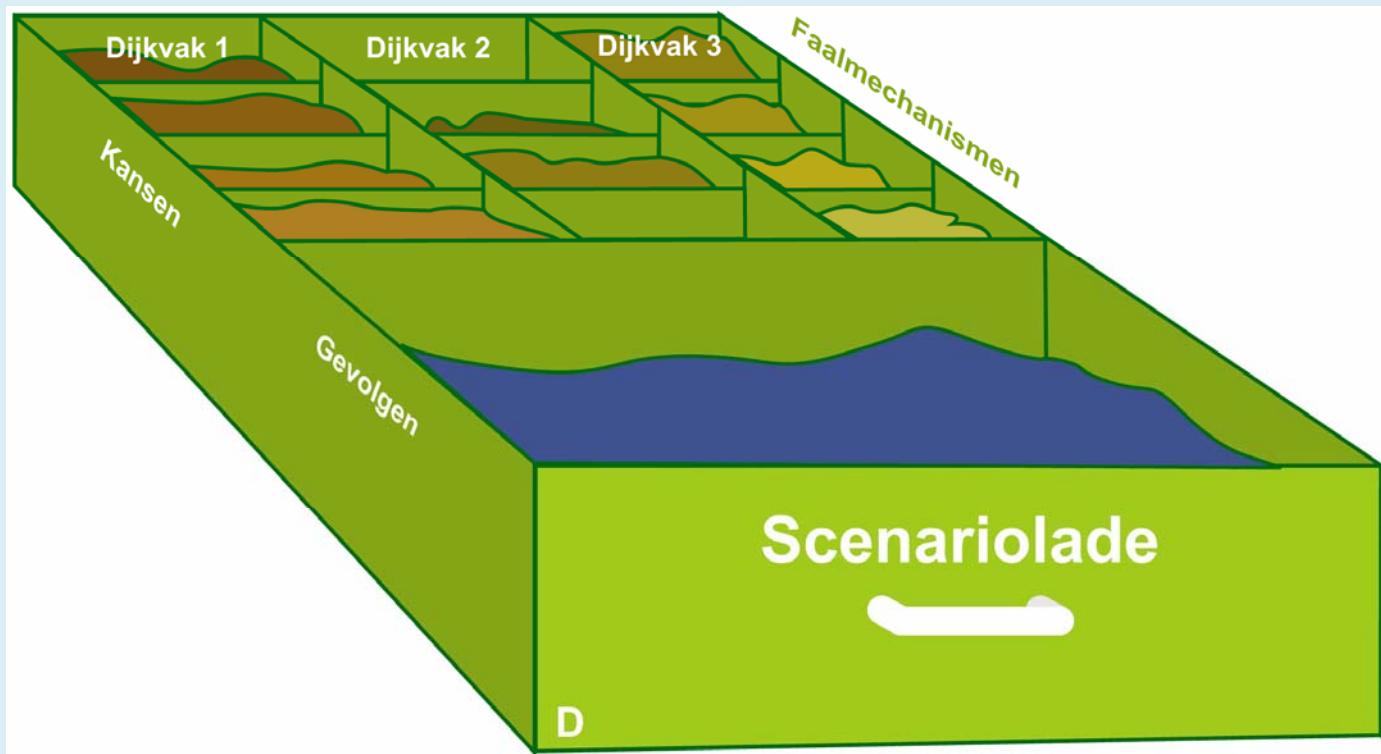
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The weakest link

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The End Result

- 2010 final report
- Set of instruments for detailed safety analysis
- Comparison of dike ring risks
- Tool for politicians (risk reduction)
- Tool for managers (maintenance)
- For both: effective direction of financial means



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Thank you for your attention

- Questions?

Veiligheid Nederland in Kaart

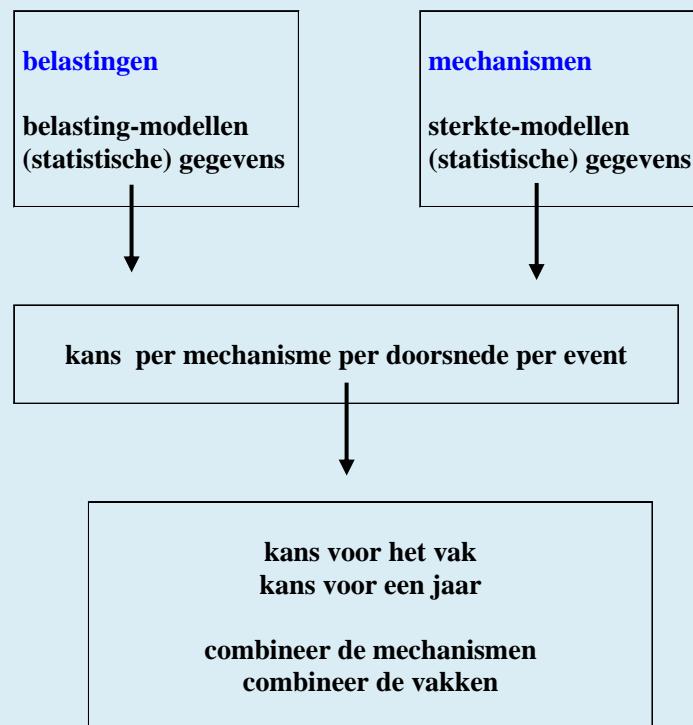


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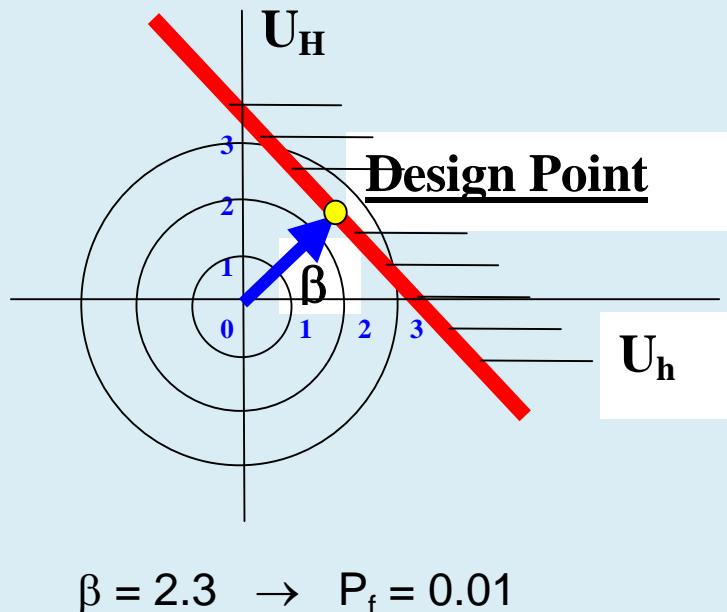
Samenvatting

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FORM



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$$Z = h_k - h - H$$

1. Wiskundige transformatie stochasten:
 - $h \rightarrow U_h$
 - $H \rightarrow U_H$
2. Betrouwbaarheidsindex β “aflezen”
3. Vertalen β naar faalkans P_f

β	0.0	1.3	2.3	3.1	3.8	4.3	4.8
P_f	0.5	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}



Faalmechanisme (2)

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Overloop (bij aflandige wind en golfhoogte < 1mm)

$Z = h_{kd} - h$ met $h_{kd} = h_d + \Delta h_c$, met Δh_c functie van kritieke overslagdebit q_c

h_{kd} = Kritieke dijkhoogte

h = locale waterstand

Grenstoestandsfunctie:

$$Z = h_d + \sqrt[3]{\frac{q_c^2}{0,36 \cdot g}} - h$$

NB: De wortelterm is gebaseerd op een volkomen overlaat



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- Opdrachtgevers
 - Directoraat Generaal Water
 - Unie van Waterschappen
 - Interprovinciaal Overleg
 - Rijkswaterstaat SDG
- Opdrachtnemer
 - Rijkswaterstaat Waterdienst
- Uitvoering markt
 - GTI's
 - Ir. Bureau's
- Kwaliteit
 - ENW



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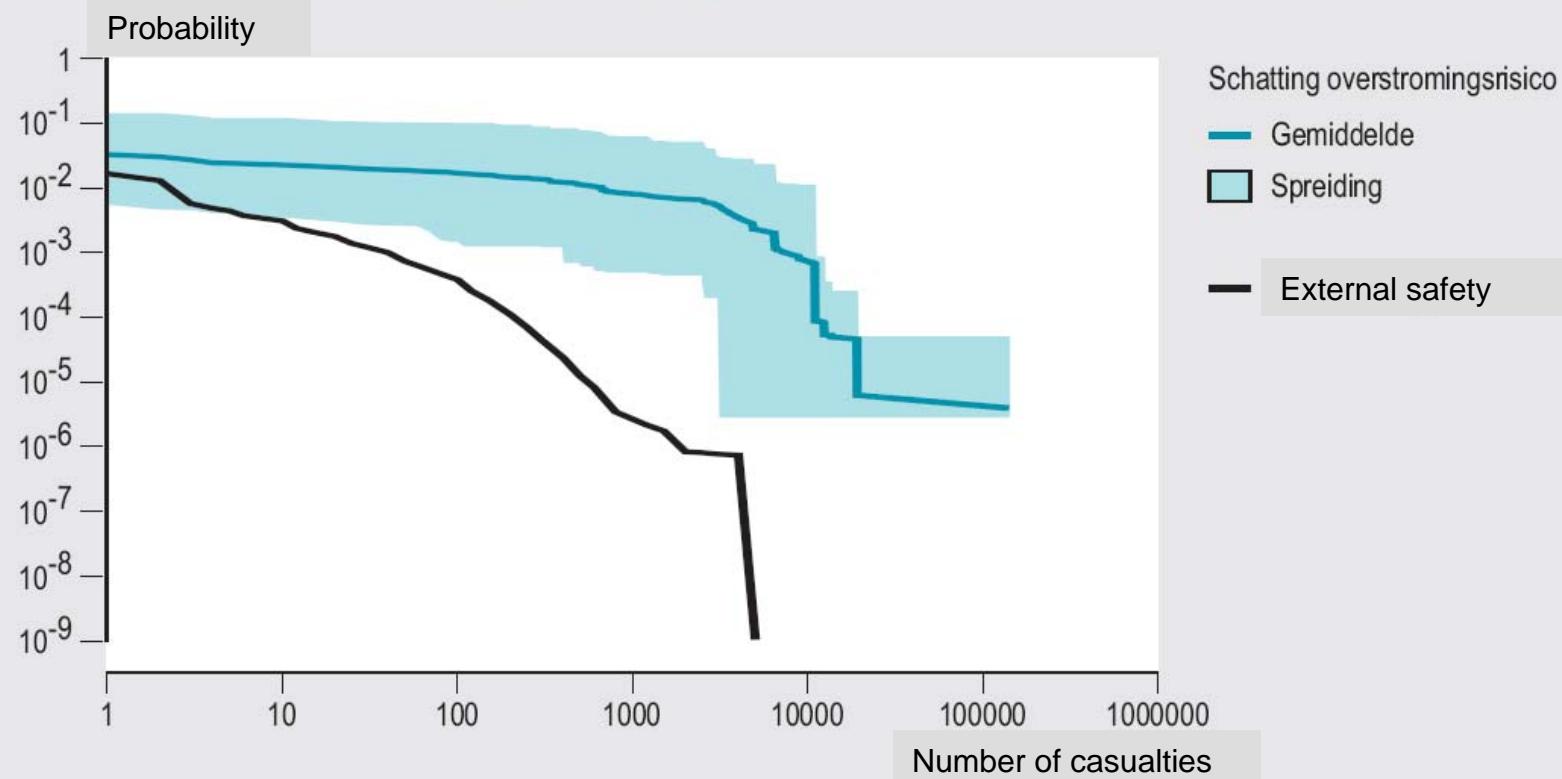
Doelen • Landsdekkend overstromingskansen, -gevolgen en -risico's: "foto"

- Beheersinstrument

- Beleid waterveiligheid
 - Normering waterveiligheid
 - Risico kaarten
 - Hoogwaterbeschermingsprogramma
 - EU hoogwaterrichtlijn



Group risk flooding dike ring area



Veiligheid Nederland in Kaart



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