

# Dealing with uncertainty - new concepts dealing with flood risk

## *Comparing discourses in Netherlands and Flanders*

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# Outline

1. Problem of flooding
2. How to deal with uncertainty
3. Theoretical framework
4. Development in flood risk management in NL and Flanders
5. Summary

# Flood risk increases



Increase in flood risk  
(probability x consequences)

• Changes in hydrological system and climate (projected)

land-use, urbanisation, deforestation, river regulation,

• Changes in socio-economic system

Increasing development and economic growth in flood prone area

# Dealing with uncertainty

- Decrease uncertainty by increasing knowledge
- co-exist with uncertainty by increasing resilience, adaptivity of the social system

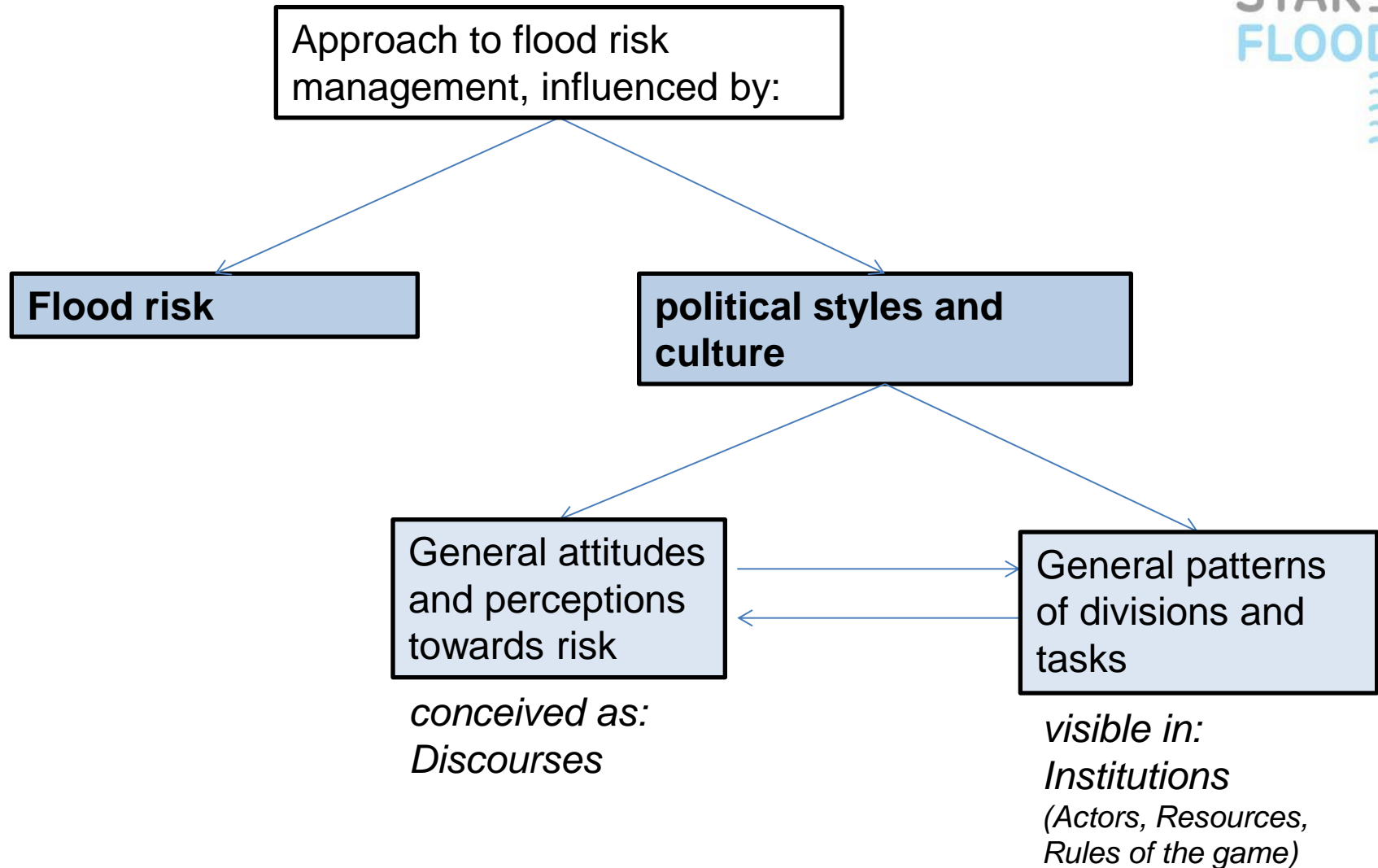


Trend in flood risk management:

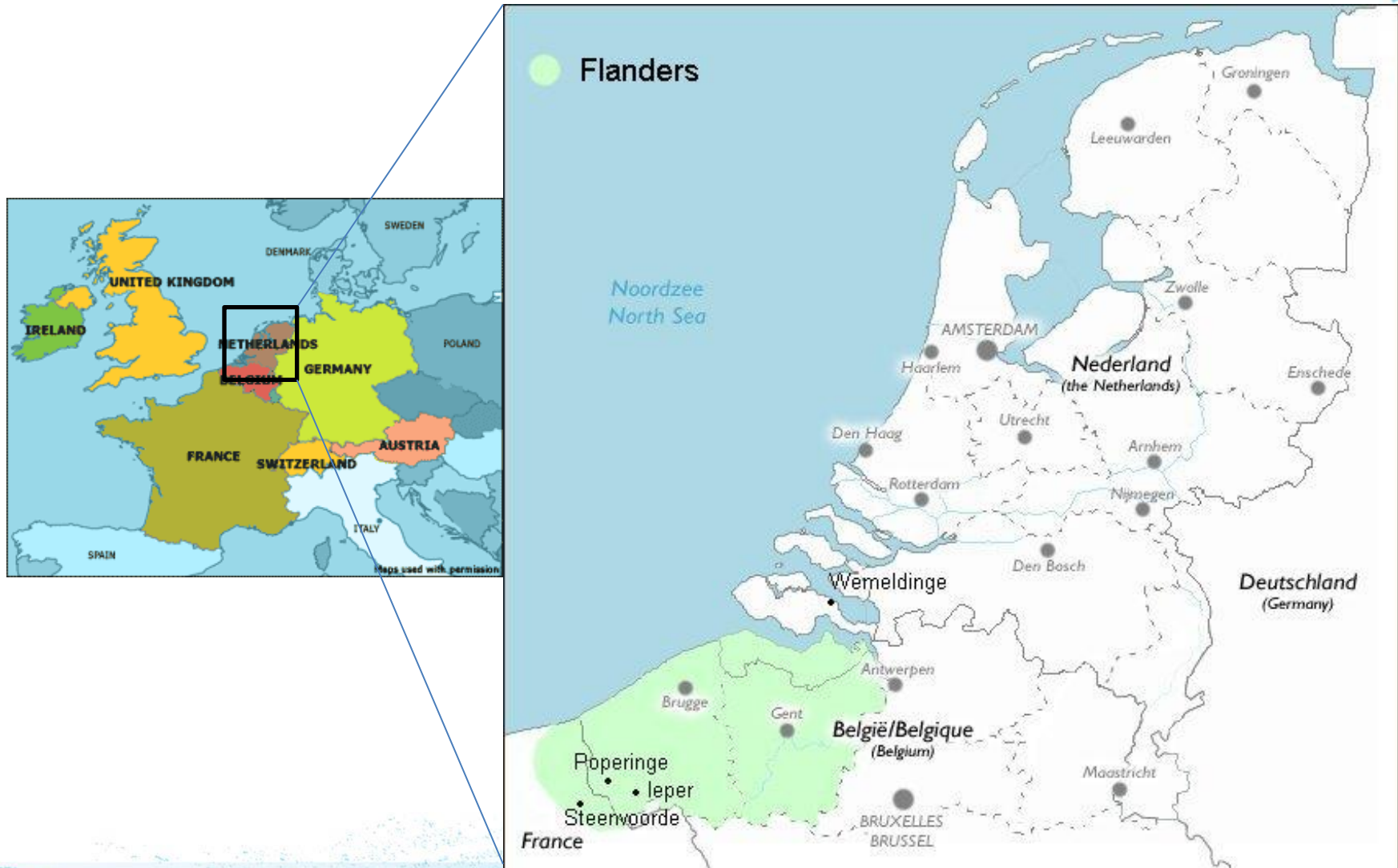
## ***diversification of flood risk strategies***

- How did the discourses on diversification of flood risk strategies developed in the two countries/ regions?
- How can differences in the discussions and the institutionalisation be explained ?

# Theoretical framework



# Geographical location



# Flood risk

Criteria	The Netherlands	Flanders
<i>Area</i>	41,000 km <sup>2</sup> (7,600 km <sup>2</sup> water)	13,682 km <sup>2</sup>
<i>Elevation</i>	Deepest: -7 m Highest: 322 m	Lowest: 0 m Highest: 287 m
<i>Population density</i>	16,805,000 (2013) 500 people/ km <sup>2</sup>	6,350,000 (2012) 470 inh./km <sup>2</sup>
<i>Urbanised:</i>		
<i>Area</i>	11%	26%
<i>Population</i>	84% (2012)	98% (2012)
<i>Flood-prone area</i>	Below sea level: 26% Naturally flood-prone area: ca. 60%	Naturally flood-prone area: 24 %

Flood risk



Flood risk

# Discursive development in flood risk management

## *The Netherlands*

Traditional, technocratic engineering approach

Accommodating water → more room for the river (ca. 2000)

Improving crisis response (ca. 2008-2010)

Multi-layered safety – national concept (2009-2015)

## *Flanders*

Traditional, technocratic engineering approach

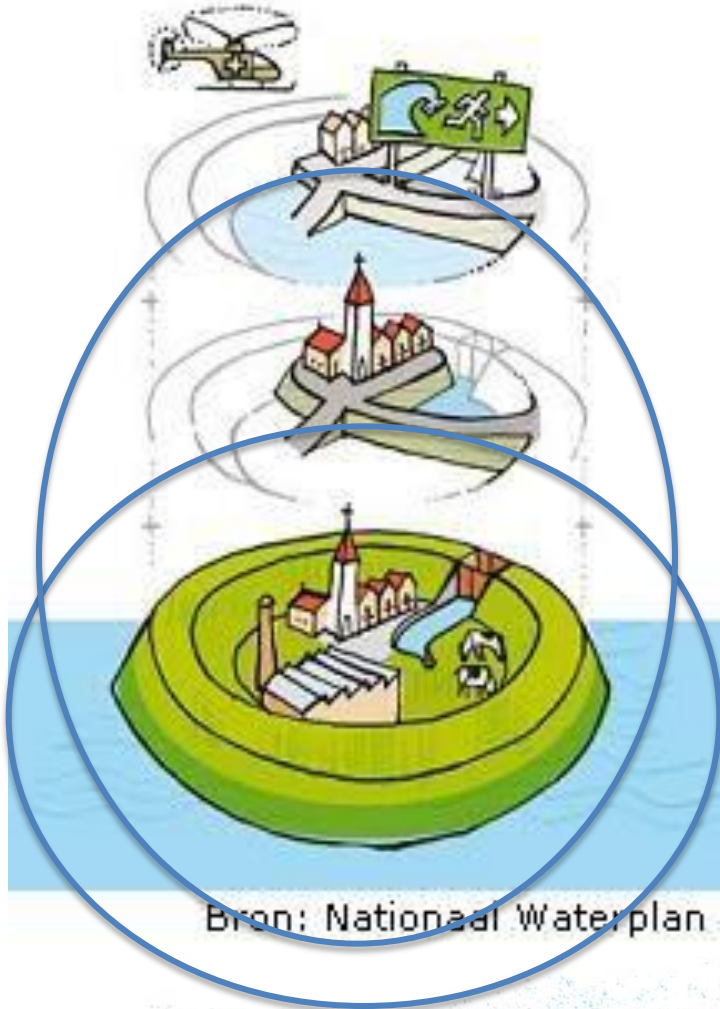
Accommodating water → flood controlled areas (ca. 2000)

Integration of quantity and quality, as well as protection and spatial planning

Multi-layered safety – discourse of Flemish environmental agency



# Multi-layered safety concept in NL and Flanders



Bron: Nationaal Waterplan

3. Layer: emergency management

2. Layer: sustainable spatial planning, e.g. *Compartmentation, water robust spatial development*

1. Layer: protection

→ *Structural measures, e.g. dikes*

→ *Measures giving more room to the river*

# Pre-liminary institutionalisation

	1. Layer: protection	2. Layer: sustainable spatial planning	3. Layer: emergency management
The Netherlands ( <i>actors, rules, resources</i> )	<p><b>Long established, stable institutions</b></p> <ul style="list-style-type: none"> <li>- Specialized actors</li> <li>- Legally established safety norms,</li> <li>- past investments in infrastructure, need for maintenance, expertise</li> </ul>	<p><b>Hardly institutionalised for FRM</b></p> <ul style="list-style-type: none"> <li>- Spatial planning authorities: municipalities, provinces</li> <li>- Water test for spatial planning, legislation under development in Delta Act</li> <li>- Delta fund for financing</li> </ul>	<p><b>institutionalised</b></p> <ul style="list-style-type: none"> <li>- Security regions</li> <li>- Evacuation plans</li> <li>- Security regions are financially dependent</li> </ul>
Belgium ( <i>actors, rules, resources</i> )	<p><b>Institutionalised integration</b></p> <ul style="list-style-type: none"> <li>-Water authorities, CIW (Committee for integrated water management)</li> <li>-Flood risk management plans</li> <li>-Past investments, possibility of expropriation</li> </ul>	<p><b>Institutionalised integration</b></p> <ul style="list-style-type: none"> <li>-Spatial planning authorities, CIW</li> <li>-Water test (also for individual dwellings), duty to inform, signal areas</li> <li>-Regulative power</li> </ul>	<p><b>Institutionalised diff. level</b></p> <ul style="list-style-type: none"> <li>-Crisis management: federal and local government</li> <li>-Flood Warning: water authorities, CIW</li> <li>-Emergency plans</li> <li>-Communication</li> </ul>

# Summary

*Dealing with uncertainty in flood risk management:*

- Similar trends → diversification of strategies → continuous process
- differences in emphasize of strategies, due to flood risk and political culture and attitude

	The Netherlands	Flanders
	Protection (1st) dominant 2nd and 3rd supporting	Protection and spatial planning (1st; 2nd) dominant 3rd layer supporting
Risk	High risk	Lower risk
Cost benefit	Cost-benefits, but with legal basis- protection and higher protection in economic important areas	Cost-benefits
<i>Path dependency</i>	Stable, highly institutionalized flood risk approach and spatial planning culture	less path dependency in flood risk management and spatial planning, more established integration
Urbanisation	More concentrated urbanised area	Higher spread of urbanised area → min. space

- role of EU policies
- Influence of contextual factors
- Within STAR-FLOOD:
  - resilience and appropriateness of strategies and their alignment will be tested
  - Chances for non-governmental actors

