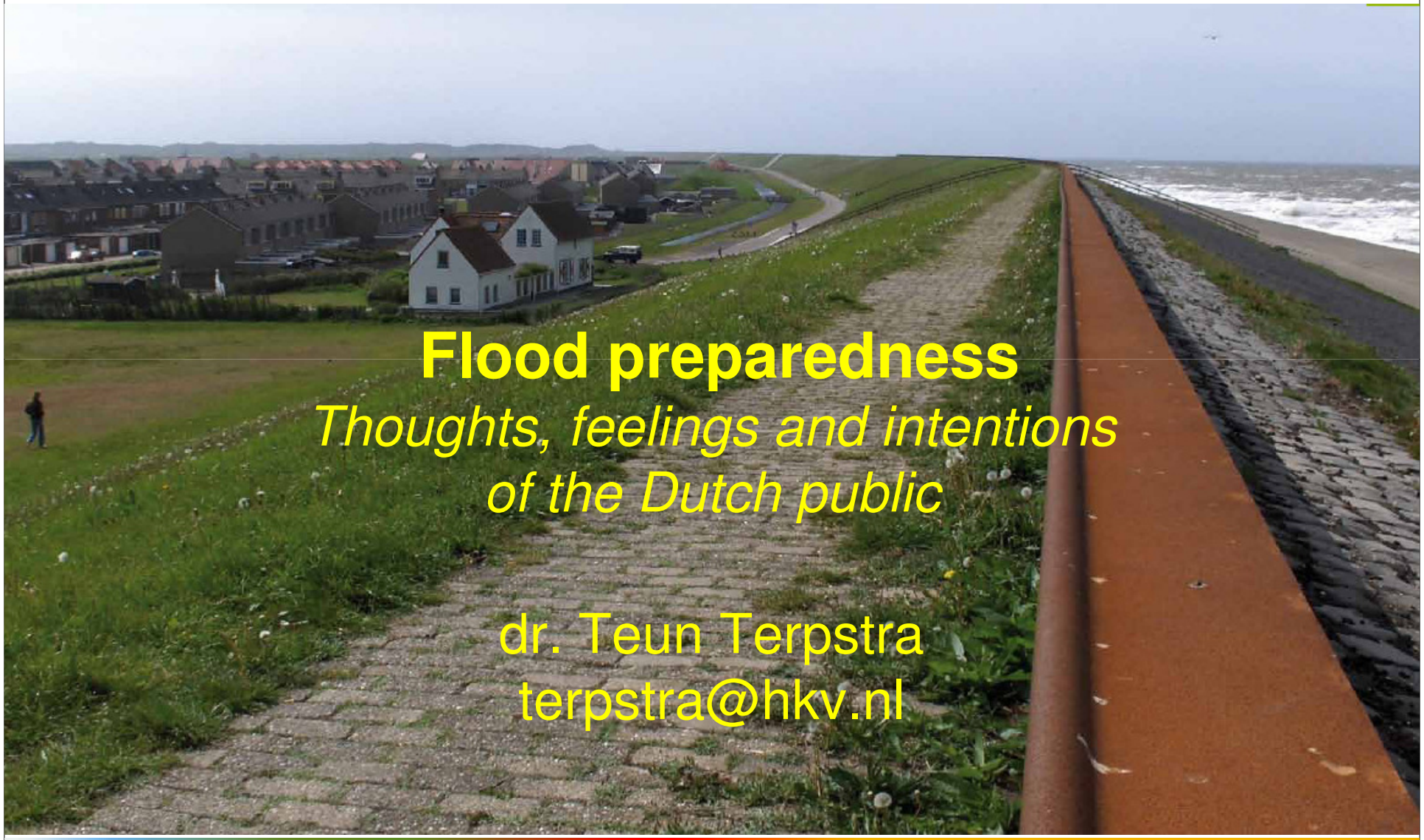


Flood preparedness

Thoughts, feelings and intentions of the Dutch public

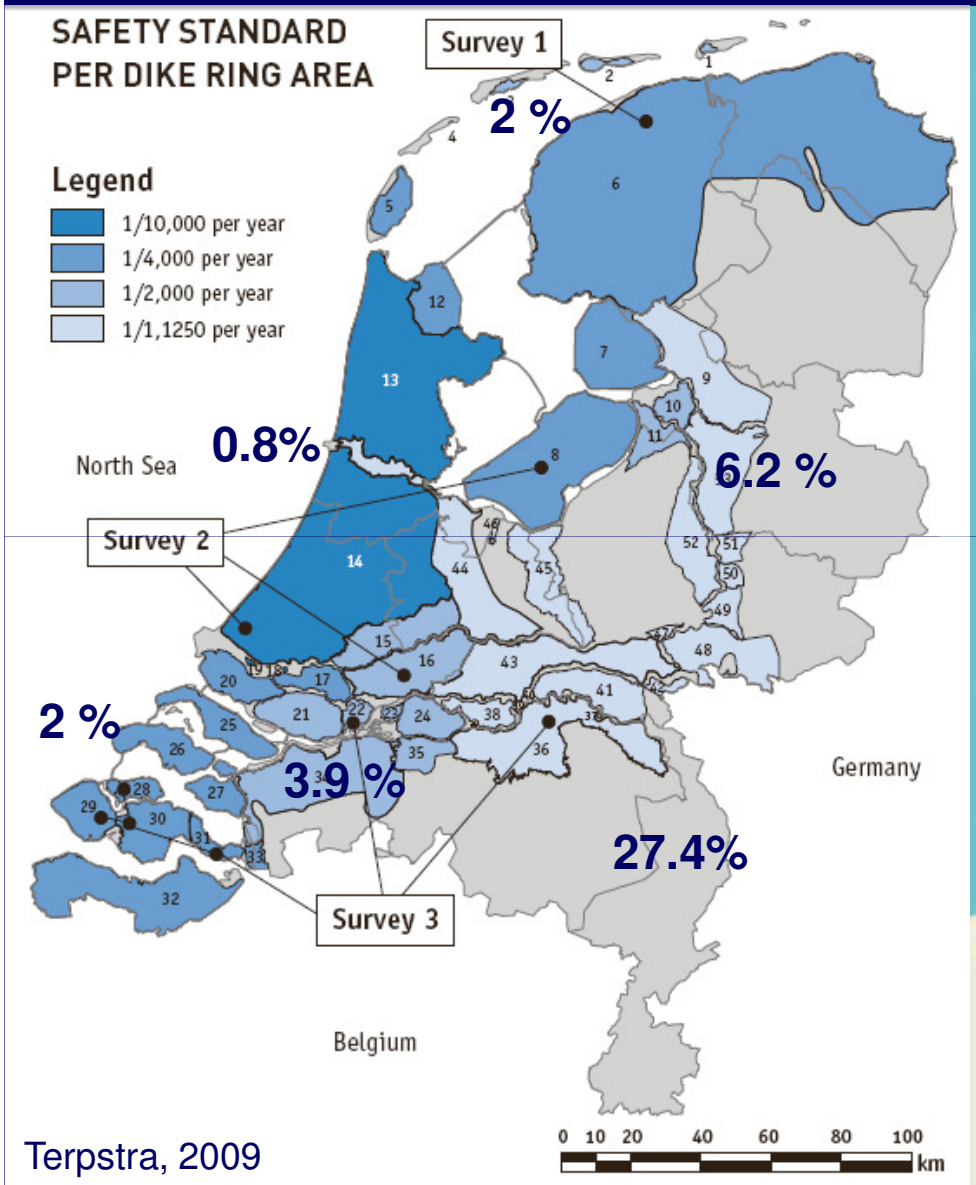
dr. Teun Terpstra
terpstra@hkv.nl

picture: National Waterplan

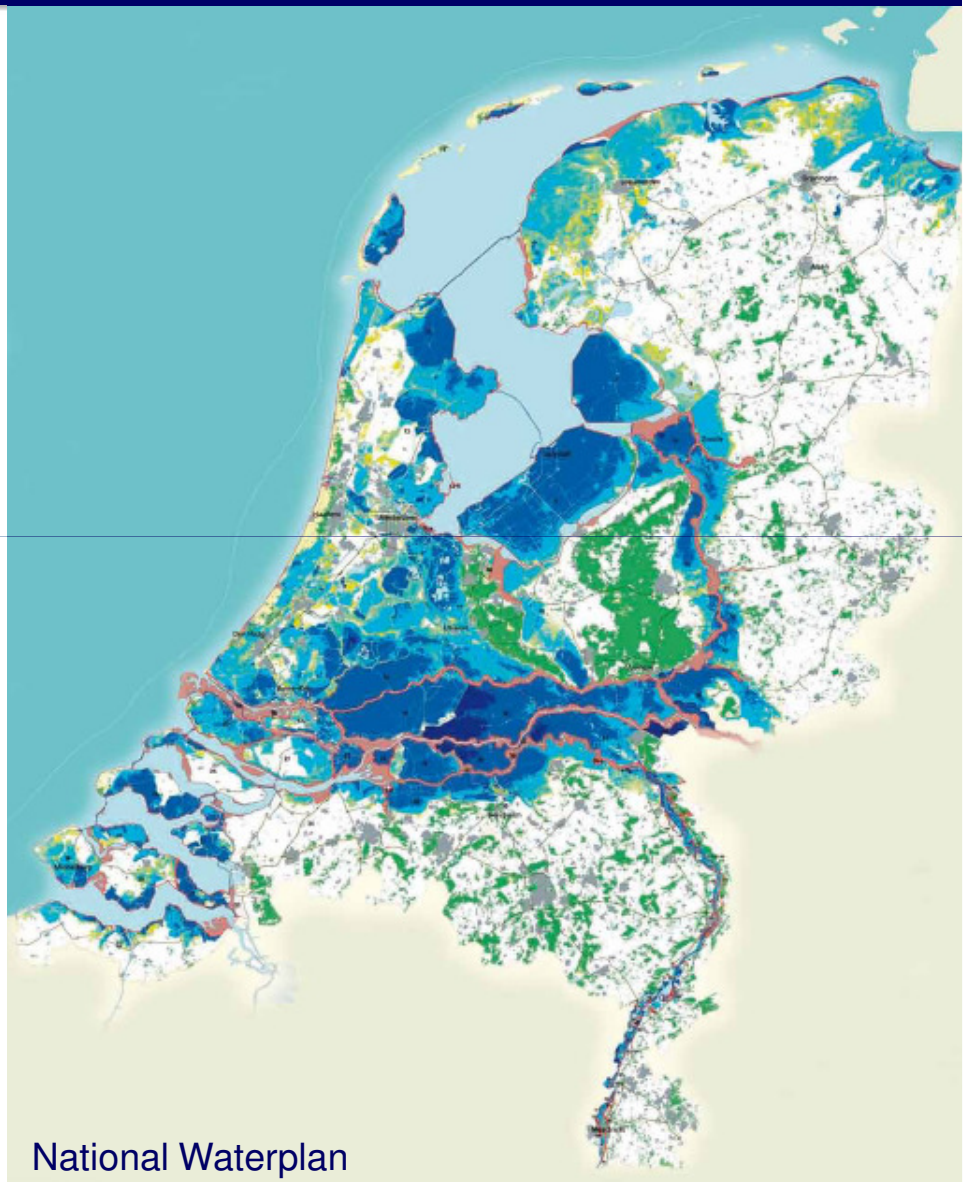
Outline

1. Introduction: Dutch flood risk context
2. Predicting flood preparedness intentions from
   - **Study 1: emotions, trust, and perceived risk**
   - **Study 2: Perceptions of hazard adjustments**
3. Implications and dilemmas
4. Questions from audience

Flood probability and consequences

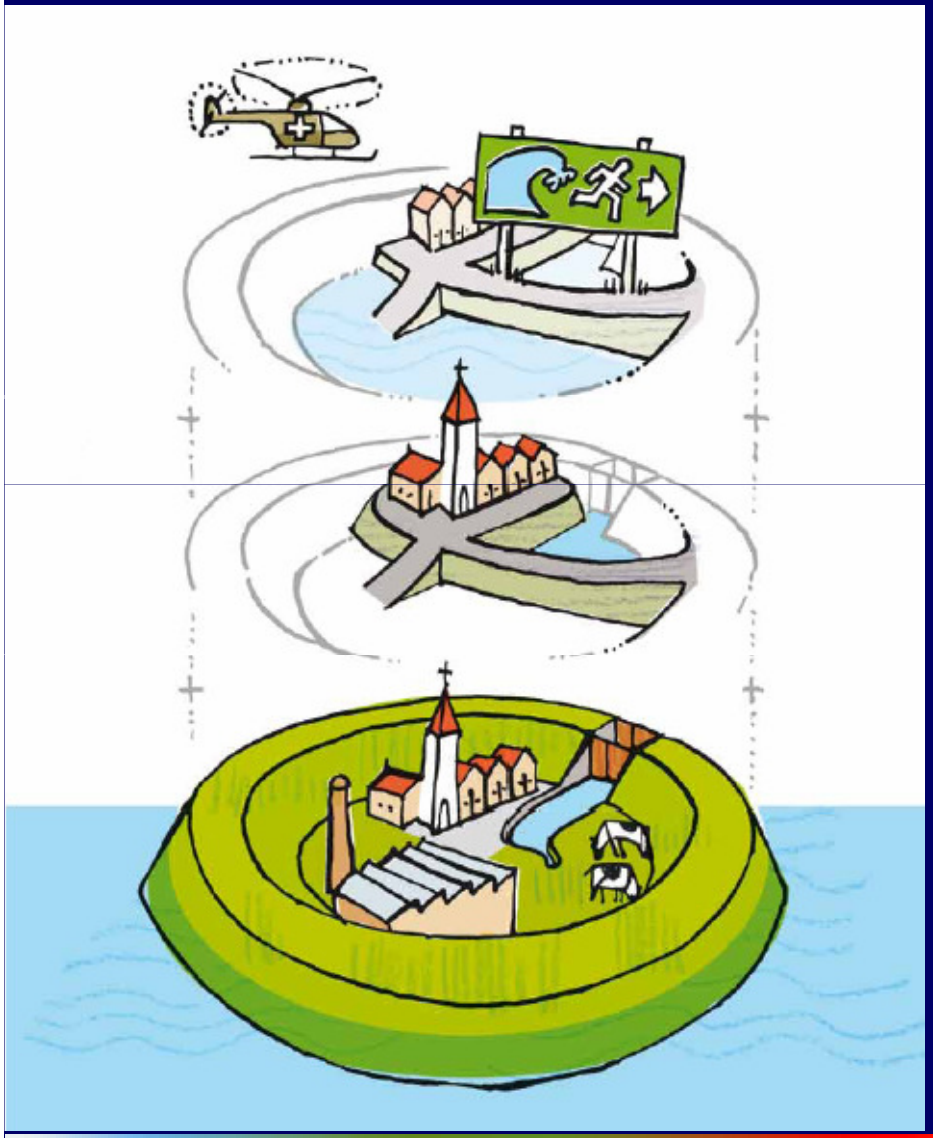


Terpstra, 2009



National Waterplan

Flood risk management context

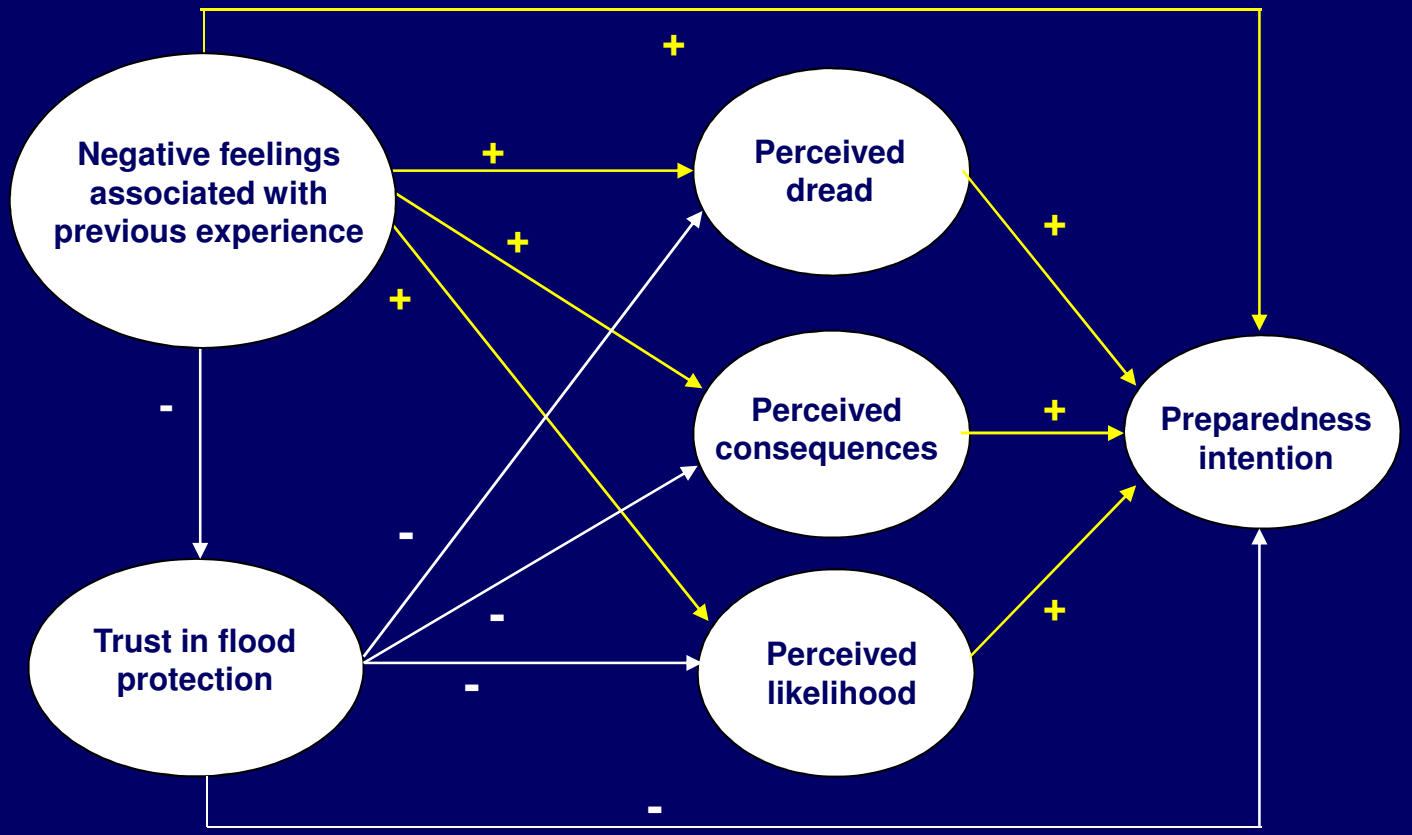


3. Crisis management by means of government and citizen flood preparedness

2. Mitigation by means of spatial planning

1. prevention by means of flood defences

Study 1: Predicting flood preparedness intentions from emotions, trust, and perceived risk



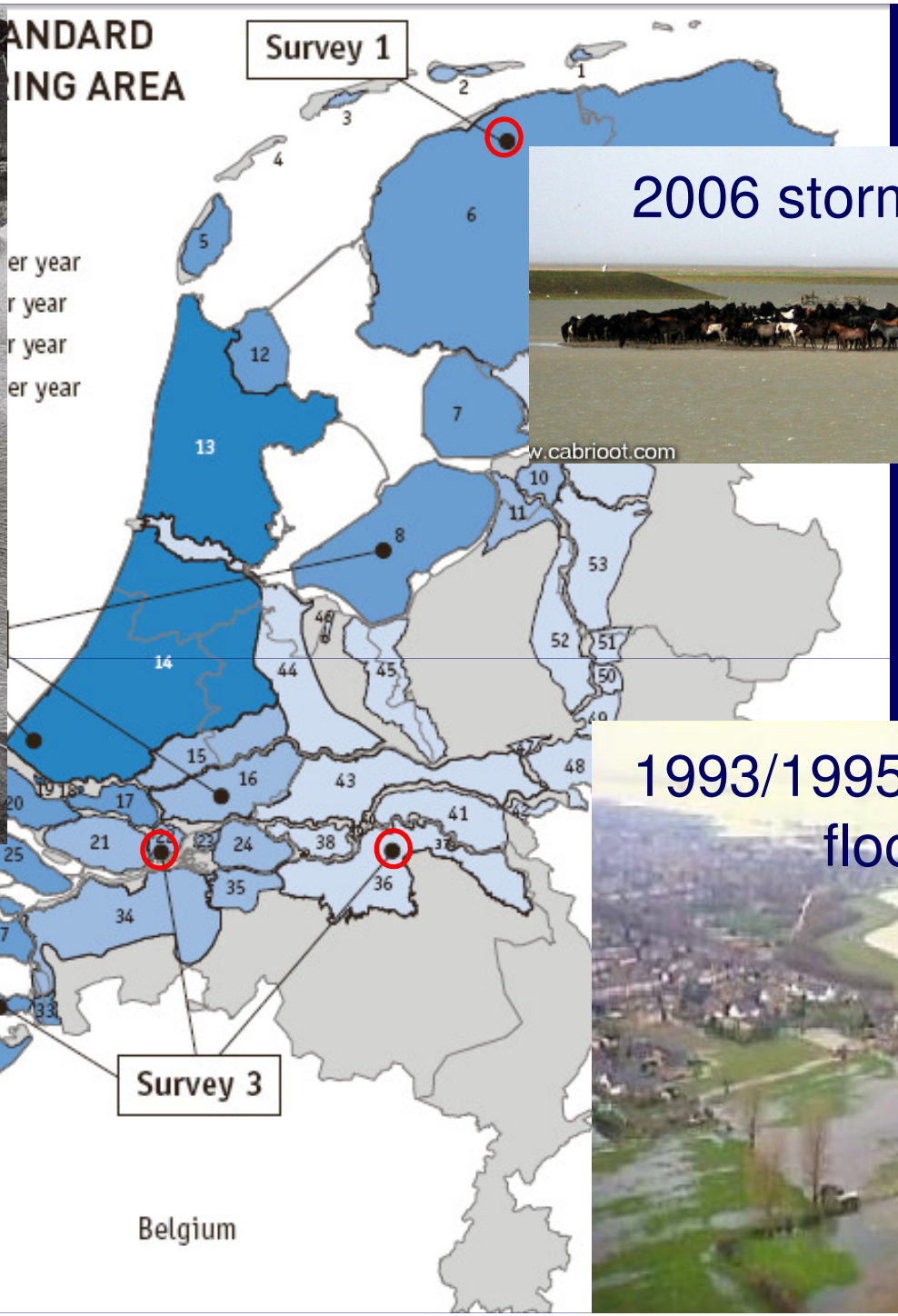
1953 flood disaster, Zeeland. Source: Rijkswaterstaat

Predicting
flood preparedness intentions

1. Emotions (experiences)
2. Trust in public flood protection
3. Perceived risk
   i. Fear (dread)
   ii. Likelihood
   iii. Consequences

- Internet questionnaires
- Items on 5 point Likert-scales
- Structural Equation Modelling

1953 flood disaster, N = 244



2006 storm, N = 169

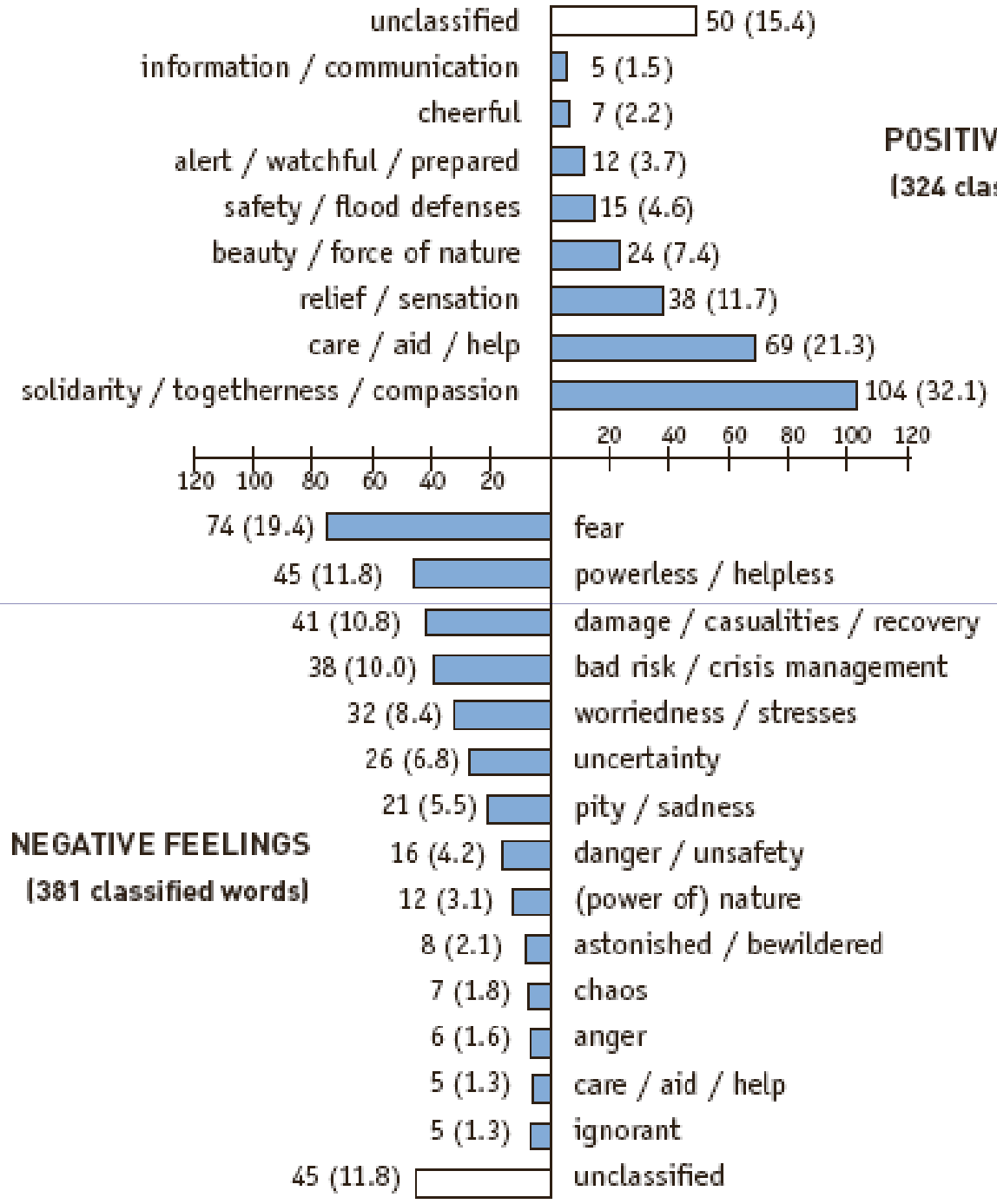
1993/1995 imminent flood threats,

N = 658

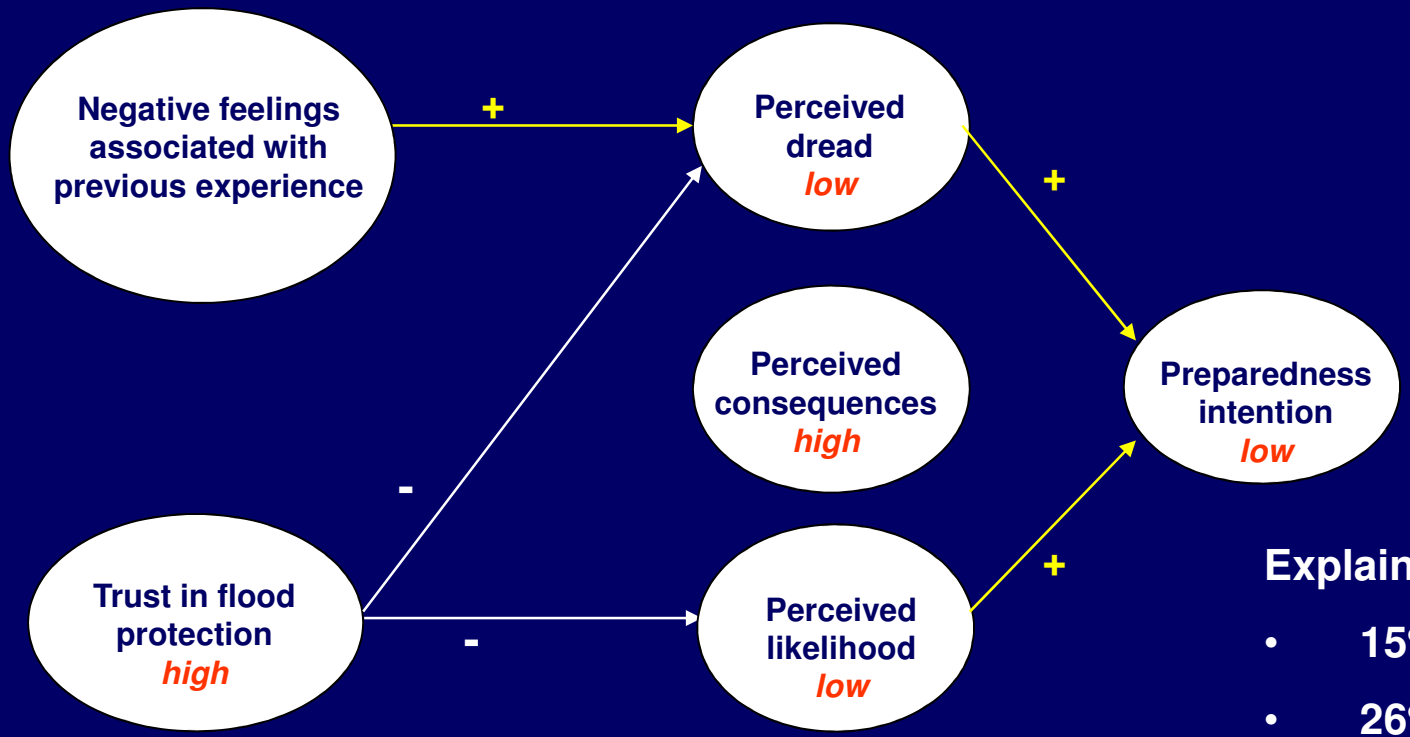
‘Could you indicate the type of feelings you experience now, when recalling what you experienced at that time?’				
1	2	3	4	5
very negative feelings	rather negative feelings	neither negative nor positive	rather positive feelings	very positive feelings

‘Could you indicate the type of feelings you experience now, when recalling what you experienced at that time?’

1	2	3	4	5
very negative feelings	rather negative feelings	neither negative nor positive	rather positive feelings	very positive feelings
25%		63%	12%	

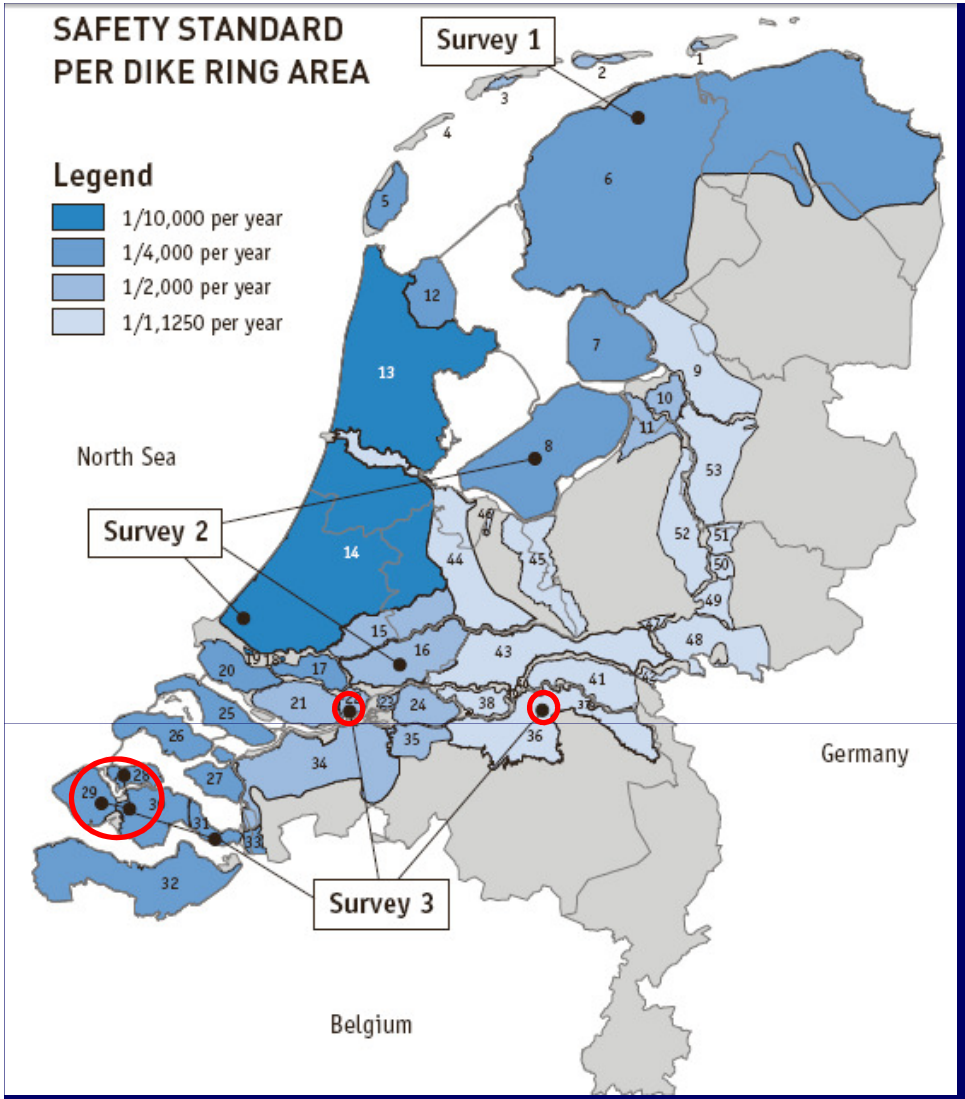

unclassified
50 (15.4)
information / communication
5 (1.5)
cheerful
7 (2.2)
alert / watchful / prepared
12 (3.7)
safety / flood defenses
15 (4.6)
beauty / force of nature
24 (7.4)
relief / sensation
38 (11.7)
care / aid / help
69 (21.3)
solidarity / togetherness / compassion
104 (32.1)
POSITIVE FEELINGS
(324 classified words)
20 40 60 80 100 120
120 100 80 60 40 20
74 (19.4)
fear
45 (11.8)
powerless / helpless
41 (10.8)
damage / casualities / recovery
38 (10.0)
bad risk / crisis management
32 (8.4)
worriedness / stresses
26 (6.8)
uncertainty
21 (5.5)
pity / sadness
16 (4.2)
danger / unsafety
12 (3.1)
(power of) nature
8 (2.1)
astonished / bewildered
7 (1.8)
chaos
6 (1.6)
anger
5 (1.3)
care / aid / help
5 (1.3)
ignorant
45 (11.8)
unclassified
NEGATIVE FEELINGS
(381 classified words)

Relations that were supported in all three samples



Explained variance R^2

- 15% (river area)
- 26% (coastal area)
- 26% (coastal area)



Study 2: Perceptions of flood hazard adjustments

Protective Action Decision Model (Lindell & Perry, 2000, 2004)

Internet questionnaires
N = 1115

PERCEIVED **EFFICACY** FOR:

Protecting Persons | Protecting Property | Other Purposes

Behavioural Intention

5.00
4.00
3.00
2.00
1.00

Cost (Money) | Time Effort | Knowledge Skills | Cooperation other persons

- Emergency info
- Household plan
- Emergency kit
- Familiy Agreements
- Insurance
- Sand bags

PERCEIVED **REQUIREMENST** FOR:

Regression analyses of behavioural intentions

	Emergency kit	Emergency info	Household plan	Family agreement	Sand bags	Flood insurance
Persons						
Property						
Other uses						
Cost						
Knowledge						
Time						
Cooperation						
R^2						
ΔR^2						

Regression analyses of behavioural intentions

	Emergency kit	Emergency info	Household plan	Family agreement	Sand bags	Flood insurance
Persons	.40***	.41***	.35***	.37***	.41***	.43***
Property	.15***	.12***	.21***	.21***	.05	.13***
Other uses	.22***	.15***	.16***	.17***	.22***	.19***
Cost						
Knowledge						
Time						
Cooperation						
R^2	39%	32%	37%	39%	33%	41%
ΔR^2						

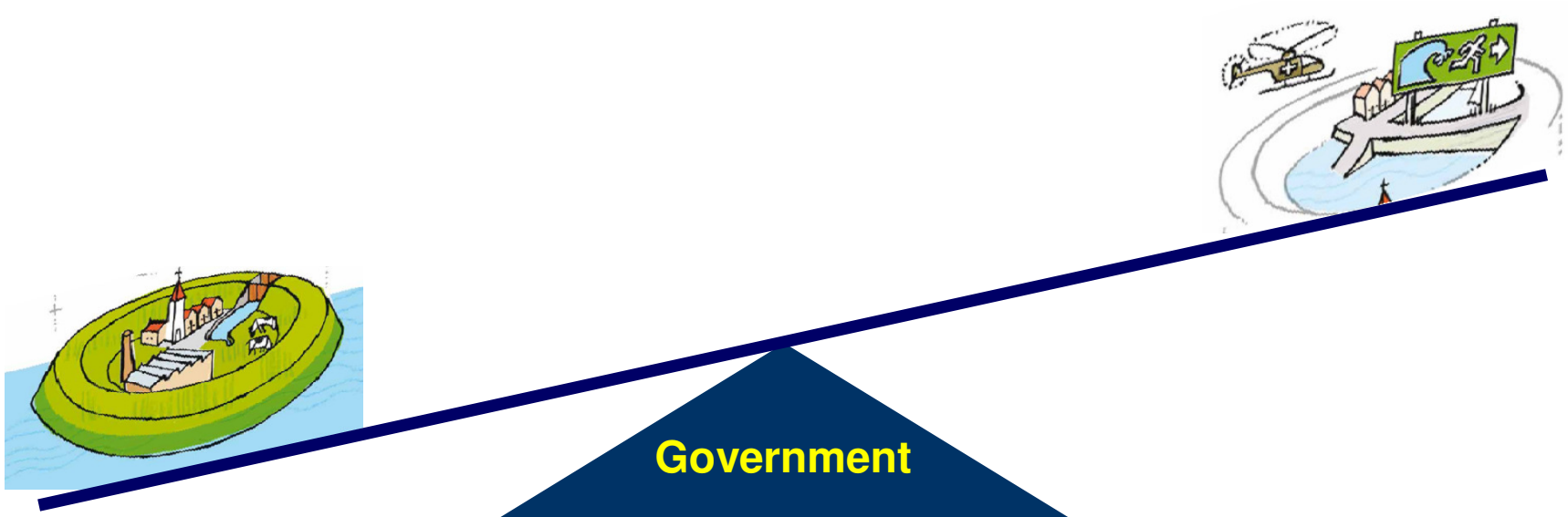
Regression analyses of behavioural intentions

	Emergency kit	Emergency info	Household plan	Family agreement	Sand bags	Flood insurance
Persons	.40***	.41***	.35***	.37***	.41***	.43***
Property	.15***	.12***	.21***	.21***	.05	.13***
Other uses	.22***	.15***	.16***	.17***	.22***	.19***
Cost	.01	-.04*	.04	.08***	-.05*	-.11***
Knowledge	-.02	-.09***	.05*	-.01	-.09***	-.02
Time	-.07***	.07**	-.10***	-.09***	-.05	-.05*
Cooperation	.05	.08**	.06**	.06**	.07***	.08***
R^2	39%	32%	37%	39%	33%	41%
ΔR^2	+0%	+0%	+0%	+0%	+2%	+1%

So, what?

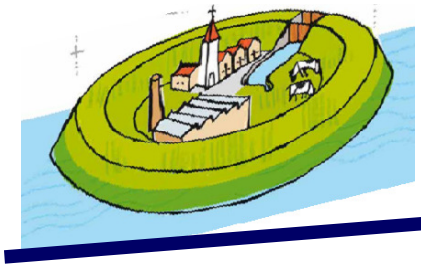
- http://www.nederlandleeftmetwater.nl/nederland_leeft_met_water/campagne

- http://www.nederlandveilig.nl/noodsituaties/campagne /



Government

risk communication



Government

risk communication

•***Framing:***

Flood Safety / Small Probability <> Flood Risk / Large Consequences

Human Control <> Natural Uncertainty:

Long term adaptation global warming <> Short term disasters could happen tomorrow

Ethics:

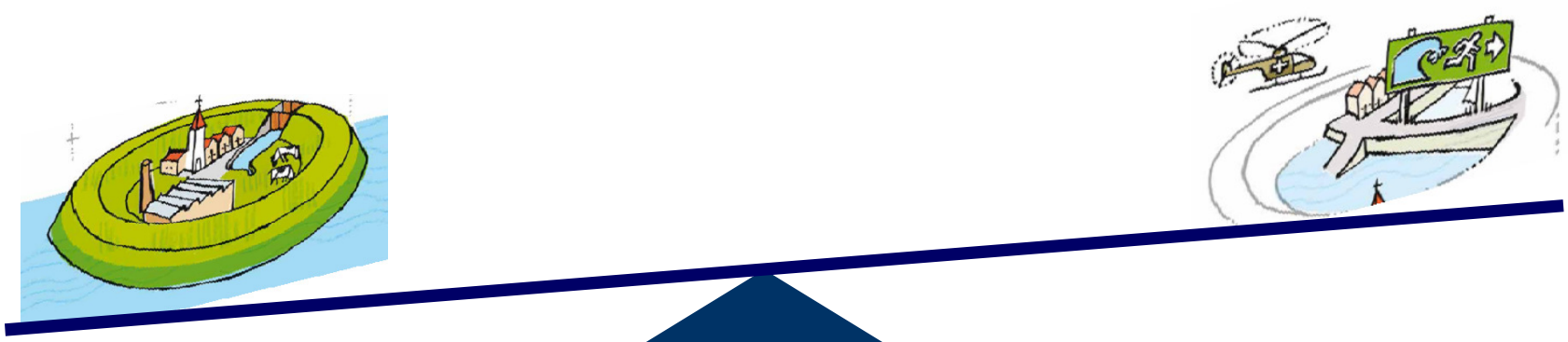
Safety Apeal <> Fear Appeal

Responsibility:

Collective <> Individual

Image:

Trusted, Capable Engineer <> Less Trusted, 'Incapable' Risk Manager



Government

risk communication

Thank you for your attention