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Awareness-raising in theory and practice

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Department of Forest Economics

NET RISK WORK – PROJECT MEETING
Freiburg, 10th May 2017

CENTRE FORESTAL TECNOLÒGIC DE CATALUNYA
E F I
FVA Forest Research Institute Baden-Württemberg
PAU COSTA FOUNDATION
PROTEZIONE CIVILE Regione Autonoma della Sardegna
VALABRE ANTICIPER VOTRE PRÉSENT

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Knowledge, Capability, Willingness

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The missing piece of the puzzle?

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Raising risk awareness

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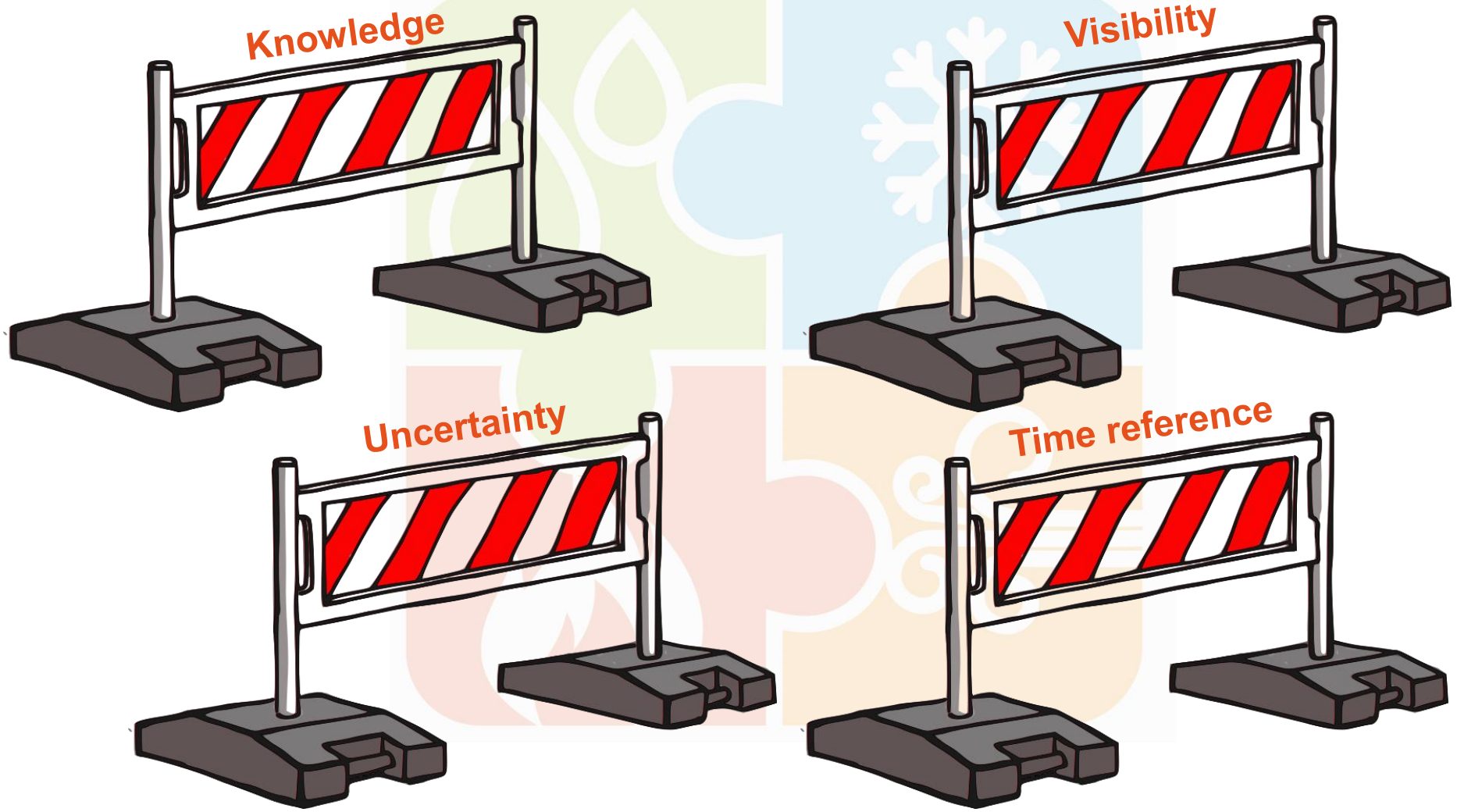
What are the barriers?



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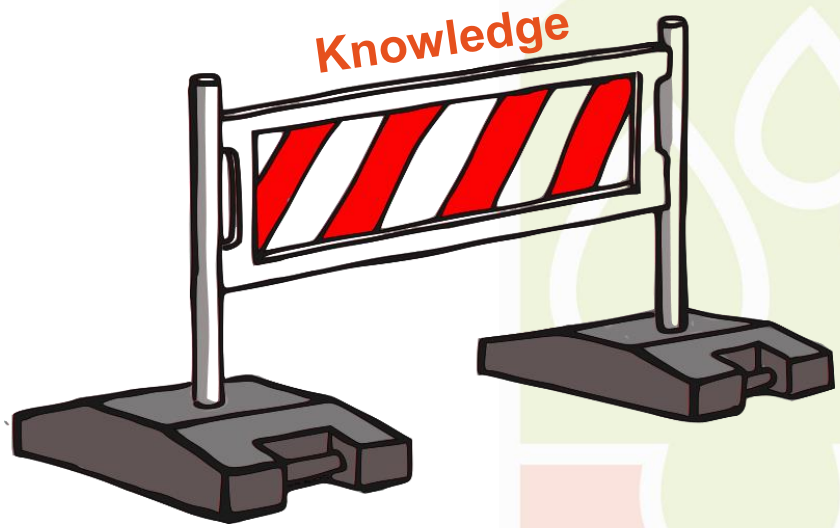
What are the barriers?



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Access to knowledge

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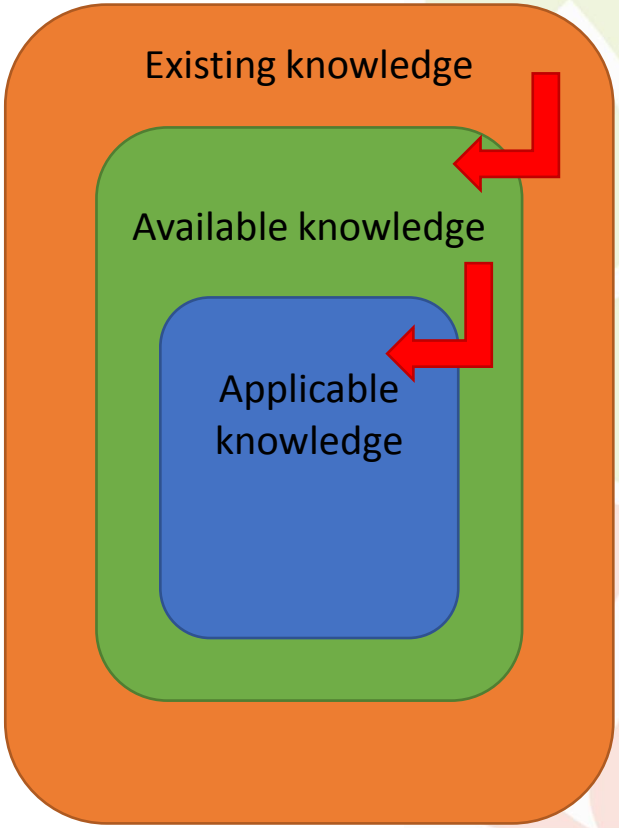
Barrier: Knowledge

Information / knowledge level



Knowledge is often not applicable

→ (Online) handbooks
→ Journals
→ Conference reports
→ New media …

→ Trainings
→ Expert exchange
→ Support

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Use of knowledge

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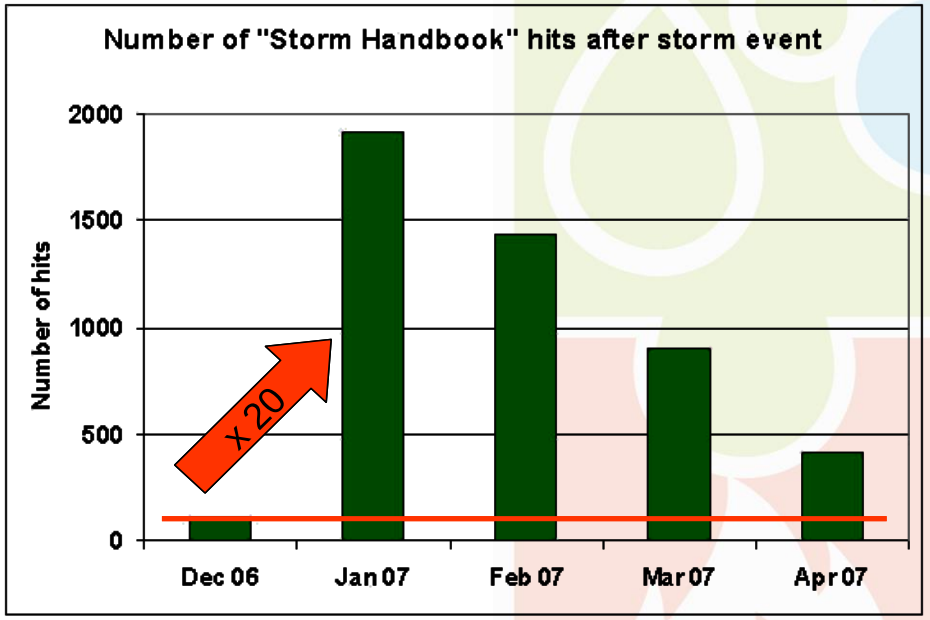
Barrier: Knowledge



17./18. Jan 2007
Cyclone Kyrill in Germany

Knowledge on risk management

Low interest during normal operation
High interest after a hazard

Focus on the crisis management, not on prevention!

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Temporal and geographical distance

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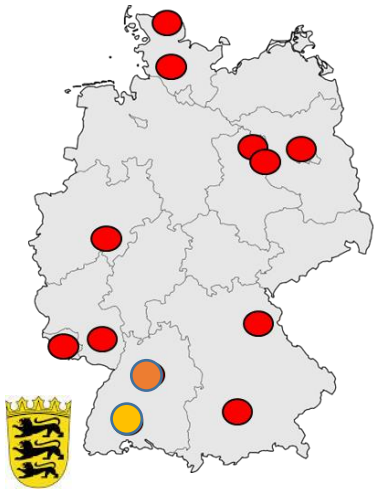
Barrier: Knowledge

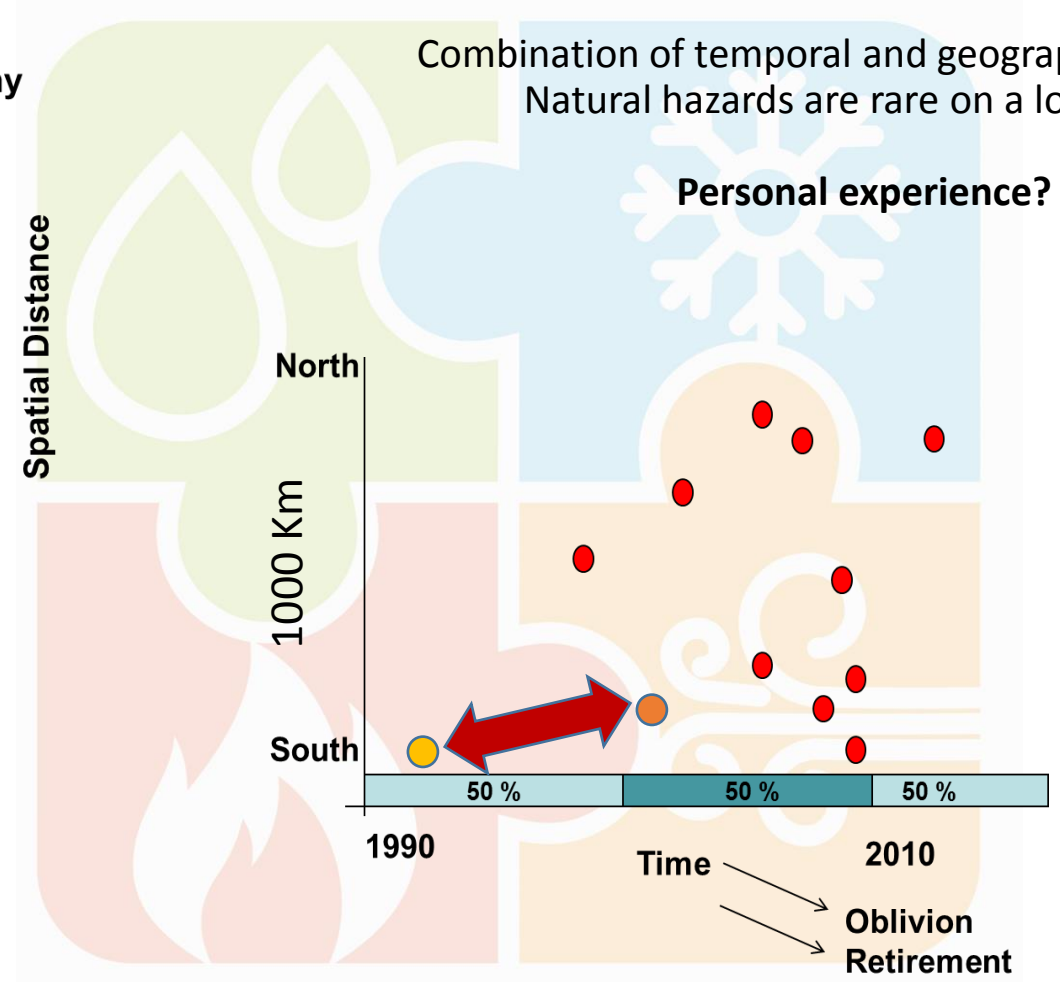
Storm events in Germany



1990 (150 %)
ca. 15 Mio. m³

1999/2000 (300 %)
ca. 30 Mio. m³

Combination of temporal and geographical distance
Natural hazards are rare on a local level



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Experience as a problem?

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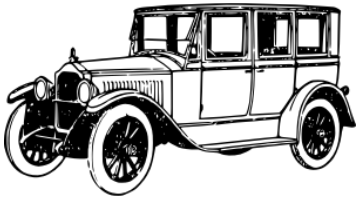
Barrier: Knowledge

Change / Science



Knowledge development / Action

Uncertain risks:

→ Available knowledge becomes outdated quickly

Experience as adviser?

Decisions based on the personal experience of infrequent hazards:
→ People tend to **underrate** the probability of a rare event

If occured very recently:
→ People tend to **overrate** the probability of a rare event

Sources: Hertwig et al. 2004, Weber 2017

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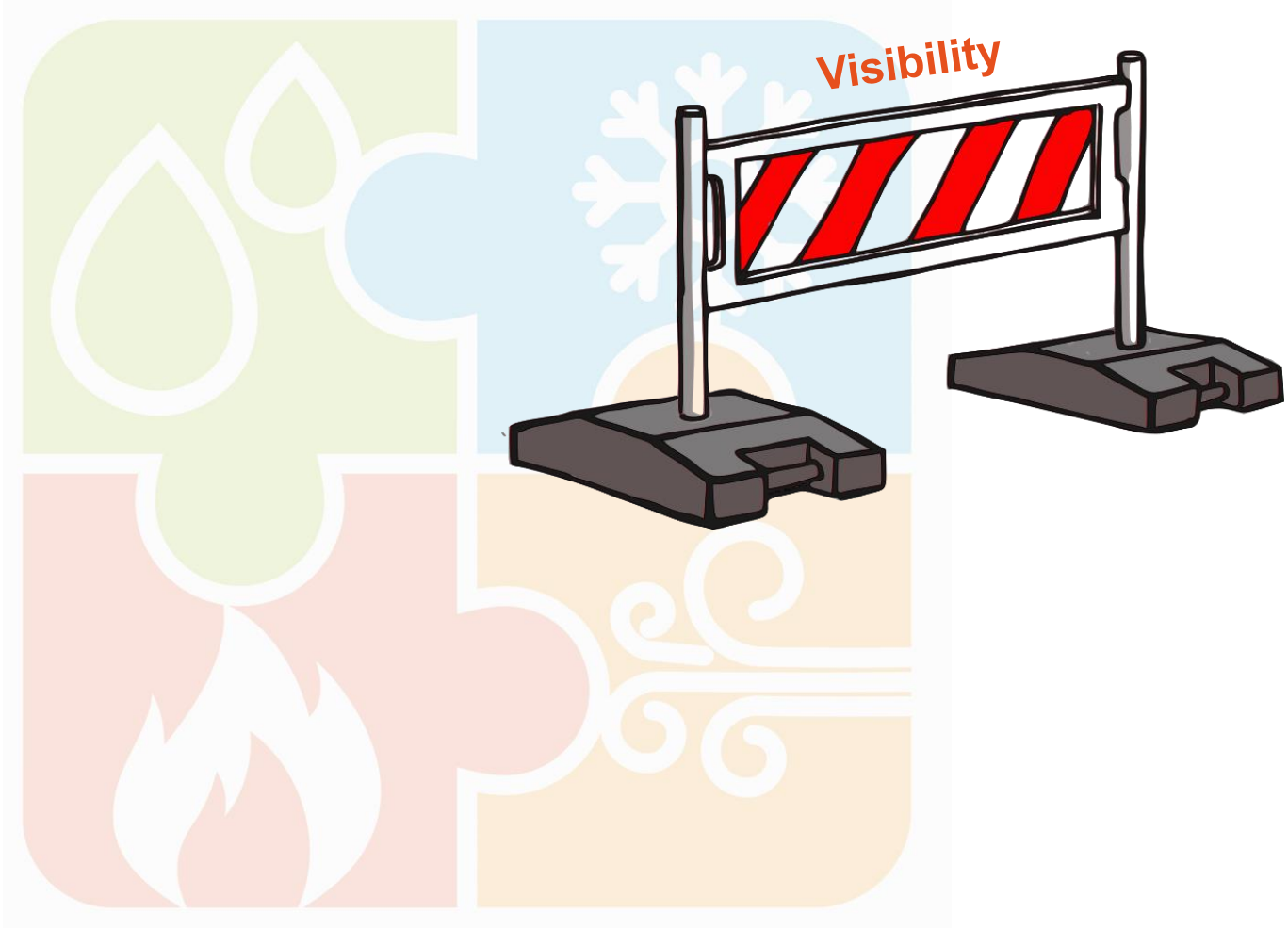

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Visibility of changing conditions

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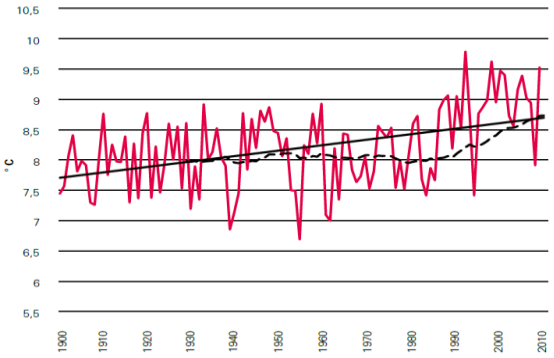
Barrier: Visibility

Hazards have a strong impact
→ stimulus to action

Damage six months after storm Kyrill
Source: Wikipedia by Vincecnt Baas, 2007

Climate change influences the probability of hazards
→ No direct perception possible



Average temperature in Baden-Württemberg (1901-2011)

- Average temperature
- Linear trend
- Polynomic trend

Source: LUBW (2011)

→ Invisibility of gradual change: Creeping normalcy

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Visibility of protective measures

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Barrier: Visibility

Visible protection – crisis management

Invisible protection – risk management

Preventive and adaptive measures have no direct rewarding effect

→ No clear cause-effect relation
→ Prevention can lower risk awareness

Preventive and adaptive measures cannot fully prevent hazards

→ Succes is reflected in lowered costs, damage, loss
→ Perception still in negative effects

Mobile flood protection wall in Dresden, Quelle: Wikipedia by MathiasDD, 2013
Polder landscape in den Netherlands, Quelle: Wikipedia by Onderwijsgek, 2012

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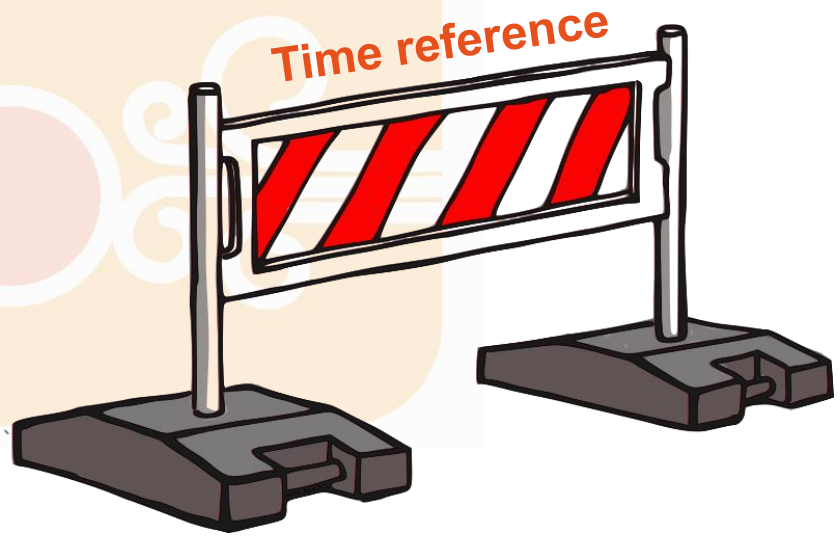
What are the barriers?



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Future oriented action

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Barrier: time reference

Closer goals are often much more present than consequences in terms of rare risks, hazards, climate change

Immediate benefit is often preferred over later benefits

→ Uncertainty of benefits

→ Fear of sacrifices

Problems to cope with distant time horizons

→ 15 years max.

→ Feasibility of long-range goals?

Sources: Hoogstra and Schanz 2009, Weber 2017

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Status-quo bias

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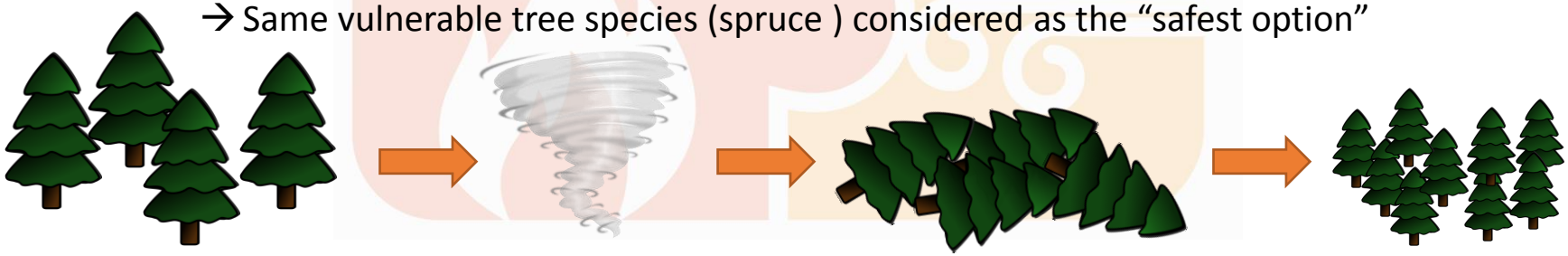
Barrier: Time reference

Focus "on actions or regimes that are already in place and makes us ignore available, but less salient, alternatives that could increase individual or public welfare" (Weber 2017)

→ First considered option: keeping the status-quo

"better the devil you know than the devil you don't"
(idiom)

Study (Lidskog und Sjödin, 2014): after storm
Uncertainty about alternative strategies
→ familiar management practices
→ Same vulnerable tree species (spruce) considered as the "safest option"



Sources: Lidskog und Sjödin 2014, Weber 2017

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Time gap between cause and effect

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Barrier: Time reference

Little short-term effects

Major long-term consequence

In forest management:
Actions aim to justify today's value conflicts, goals and interests.

→ justifying or legitimizing in advance of what can be judged as successful or efficient only in retrospect

Time gap between cause and effect
Source: New York magazine 1976

Sources: Detten 2013

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Underestimation of naturally varying hazards

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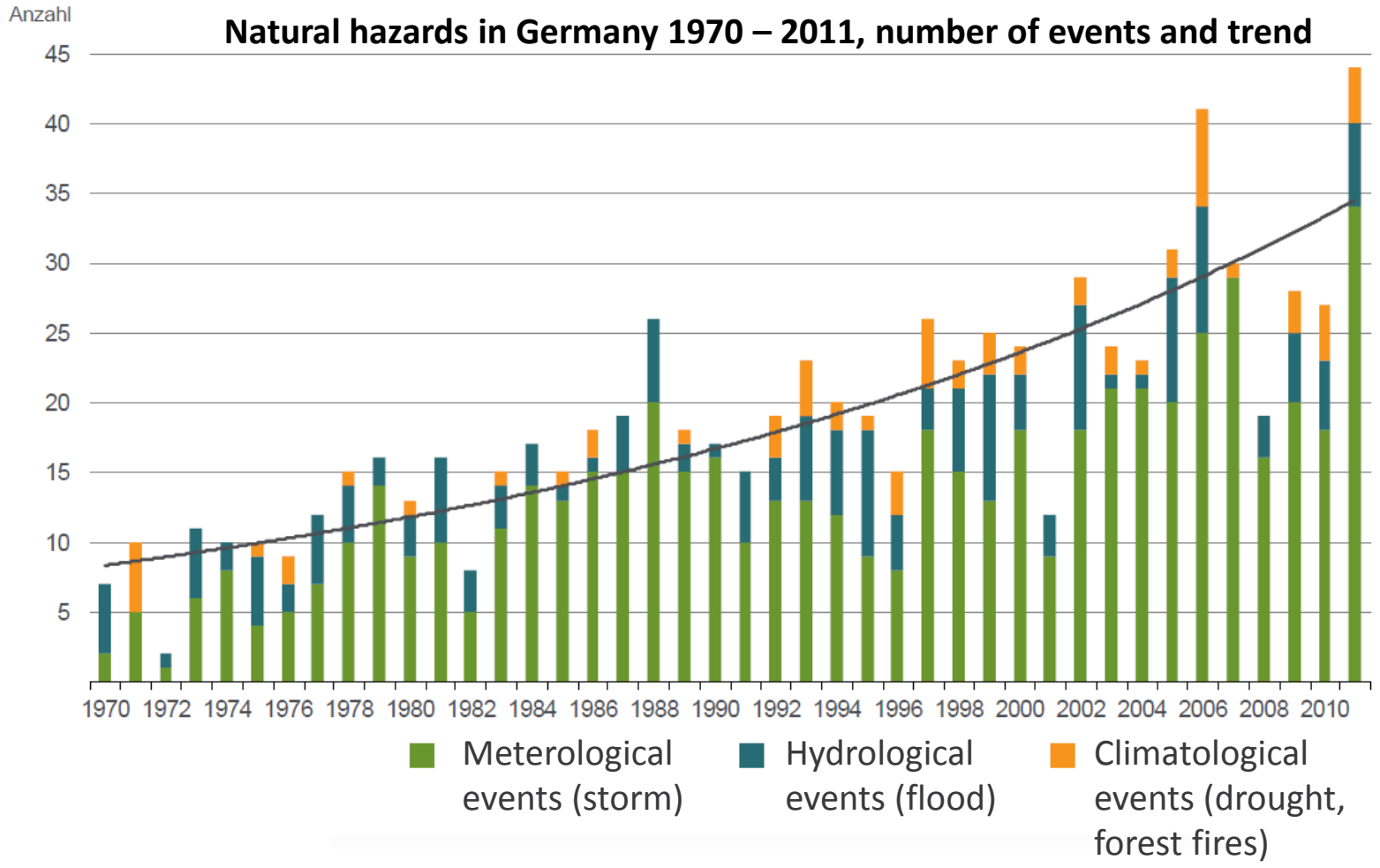
Barrier: Time reference



Source: NatCatSERVICE –July 2012

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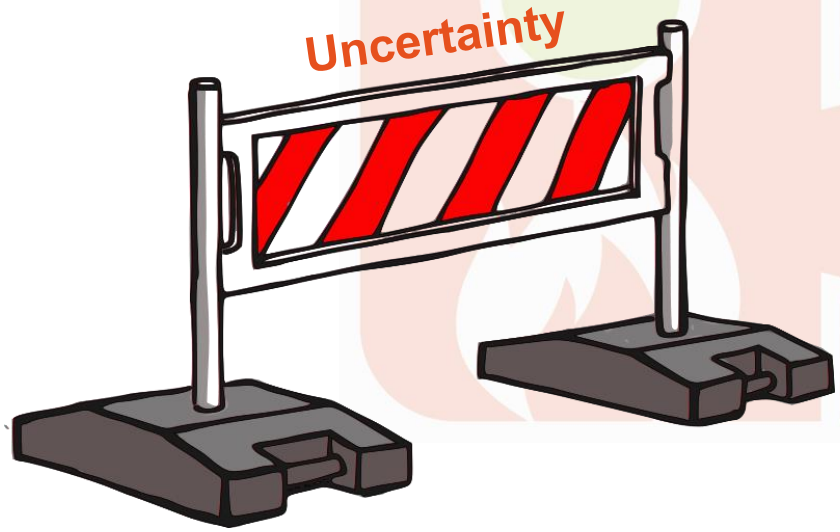
What are the barriers?



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Conflicting goals

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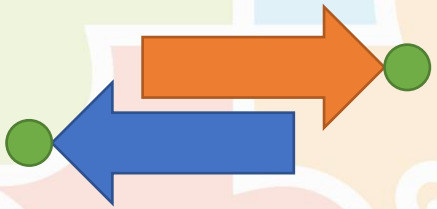
Barrier: Uncertainty

Risk management goals can be in conflict to other management goals:

Nature protection
Recreation
Profit



Sources: Hoogstra and Schanz 2009, Weber 2017

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Decision-making under uncertainty

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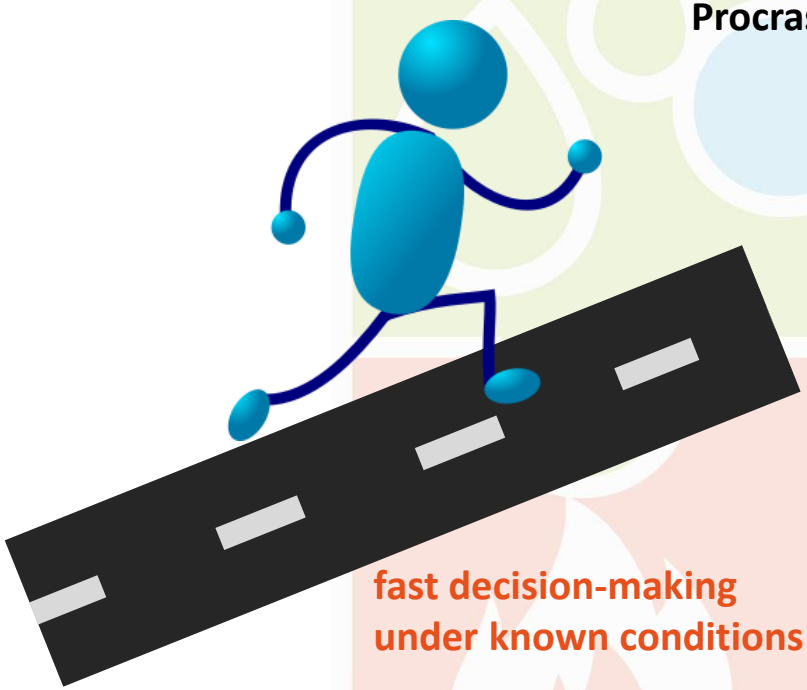
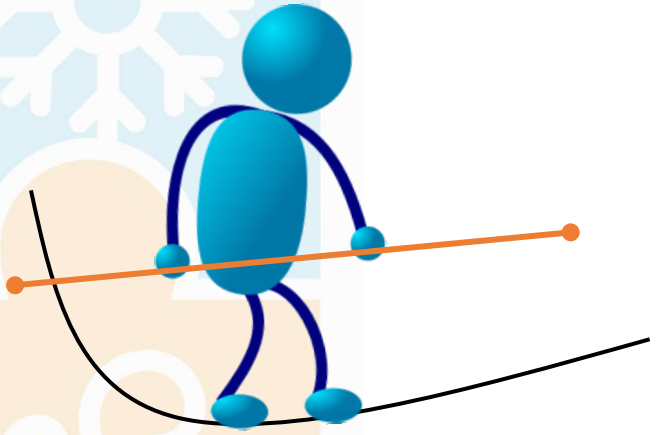
Barrier: Uncertainty



Procrastination

fast decision-making
under known conditions



Slow decision-making under
uncertain conditions

Sources: Hoogstra and Schanz 2009, Weber 2017

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RISK PERCEPTION IN THEORY

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What is a risk?

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Definition and meanings

Risk:

The combination of the probability of an event and its negative consequences.
(UNISDR Terminology / ISO/IEC Guide 71)

Semantic images of risk refer to...

Risk as a pending danger (fatal threat)

Risk as a stroke of fate

Risk as a personal thrill

Risk as a gamble

Risk as an indicator of insidious danger (slow agents)

Sources: Renn 2008

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Risk perception

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RISK ≠ RISK PERCEPTION

Statistical risk does not meet risk perceptions of society

Why?

- Control (personal / institutional)
- Voluntariness
- Individual concern
- Blame
- Familiarity

Social amplification of risk

Communicated risks interact with individual psychological, social and other cultural factors

→ Decrease

→ Increase

Statistical effects

Sources: Kasperson et al. 1988, Slovic 1996, Groß 2011, Detten et al. 2013, Brand 2014, Renn 2014

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Heuristics

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Coping with risk and uncertainty guided by intuition

Heuristic: *Any approach to problem solving, learning, or discovery that employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals.*

Satisficing (from satisfy & suffice): choosing the first possible opportunity to meet the purpose in uncertain situations

Availability: Relevance determined by mental presence of a risk and previous experience

Anchoring effect: internal references determine risk information (e.g. mood, experience)

Intuitive inductive reasoning: generalized personal experience and perception

Emotional reasoning: emotional and affective processes guide risk perception

Sources: Tversky and Kahnemann 1974, Renn 2014

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Individual experience

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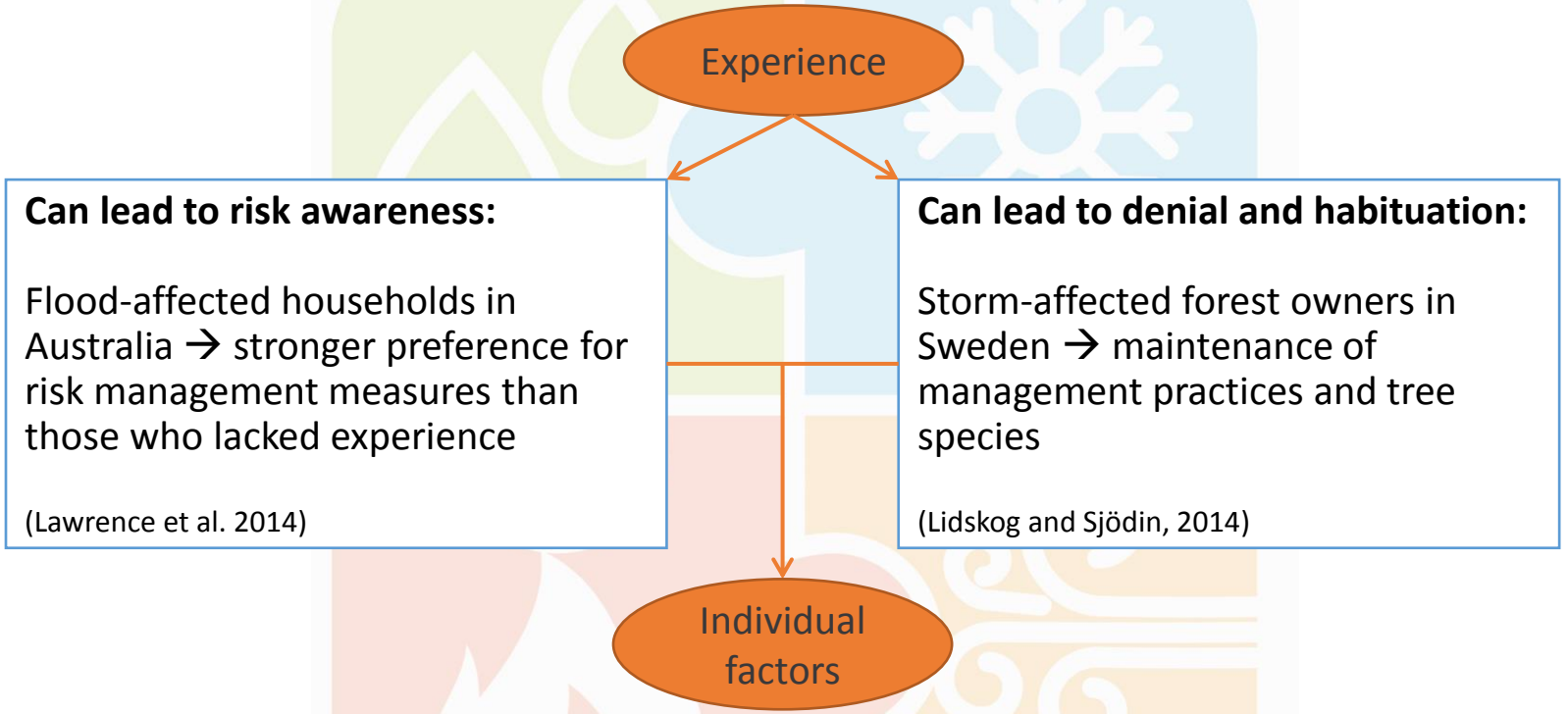
Anchoring



Sources: Baron et al. 2000, Grothmann 2005, Glik 2007, Heinrichs und Grunenberg 2009, Renn 2014

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Perception of natural hazards

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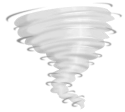
Influence of heuristics and perception biases

Natural hazards are perceived as not influenceable
→ Effects are also perceived as given
(no one to blame)



Rare catastrophes seem more dangerous than common 'small' events
(emotional reasoning, availability heuristic)

but

Recent "available risks" are seen as more worrisome for the future → crisis-driven regulation
(inductive reasoning, availability heuristic)

False attributions of causes
Perceived experience with hazards due to climate change than statistically possible
(anchoring heuristic)

Sources: Grothmann 2005, Seidl et al. 2015, Wiener 2016

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The problem with scenarios

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Extrapolation bias, causal connections and we are still alive

Extrapolation bias

New circumstances are imagined similar to already existing ones
Something completely new is hard to imagine (e.g. the first cars looked like carriages, aliens in science fiction)

Retrospect

If a "worst-case-scenario" does not occur, it is perceived as hysteria and error of experts
→ Preventive measures could have avoided the worst

↓

Consistent end of the world
The public is tired of computer-modeled "doomsday scenarios"

Typical errors in dealing with scenarios:

- Thinking in linear relations
- Thinking in causal chains instead of causal networks
- Overemphasis of current objectives

Sources: Dörner 2002, Funke 2008, Gesang 2011, Detten 2013

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The importance of trust

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easy to loose - hard to earn

How trust affects risk perception

- Lack of trusts leads to a distorted picture of a risk
- Trust influences the selection of information sources

Trust in science is crucial for risk assessment

Without trust, science can only encourage further suspicion because it reveals “bad news”

Sources: Slovic 1996, Schütz 2008,

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The importance of social situations

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a social experiment

Plausibility over accuracy

- Social situations are meaningful in themselves
- Even contradictions and complex situations are creatively interpreted

student

psychologist

Group 1:

Group 2:

Sources: Weick 1995, Renn 2014

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The importance of social learning

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We are social beings

Learning theory:

→ Direct learning from own experience

→ Social learning from others

→ Social learning with others

Influence on risk perception:

- Clear correlation between risk awareness of a person and its social environment

- Abstract risks are better understood when shared and discussed through own experiences

Controlled process of social learning
→ Communities of Practice

Sources: Banduras 1977, Marx et al. 2007, Taddicken and Neverla 2011, Reser and Swim 2011

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Societal perspective on risk

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Framing effects

Frames:

"Frames are interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it" (Nisbet, 2009)

Function:

They organize experience – what counts as relevant for attention and assessment?
They bias for action – what style of decision or behavioural response is appropriate?

Sources: 6 2005, Nisbet 2009,

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Societal perspective on risk

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Framing effects: Typology of frames applicable to climate change

Frame	Defines science-related issue as . . .
Social progress	A means of improving quality of life or solving problems; alternative interpretation as a way to be in harmony with nature instead of mastering it.
Economic development and competitiveness	An economic investment; market benefit or risk; or a point of local, national, or global competitiveness.
Morality and ethics	A matter of right or wrong; or of respect or disrespect for limits, thresholds, or boundaries.
Scientific and technical uncertainty	A matter of expert understanding or consensus; a debate over what is known versus unknown; or peer-reviewed, confirmed knowledge versus hype or alarmism.
Pandora's box / Frankenstein's monster/runaway science	A need for precaution or action in face of possible catastrophe and out-of-control consequences; or alternatively as fatalism, where there is no way to avoid the consequences or chosen path.
Public accountability and governance	Research or policy either in the public interest or serving special interests, emphasizing issues of control, transparency, participation, responsiveness, or ownership; or debate over proper use of science and expertise in decision-making ("politicization").
Middle way / alternative path	A third way between conflicting or polarized views or options.
Conflict and strategy	A game among elites, such as who is winning or losing the debate; or a battle of personalities or groups (usually a journalist-driven interpretation).

Sources: Nisbet 2009, Reser et al. 2011, Neverla 2012

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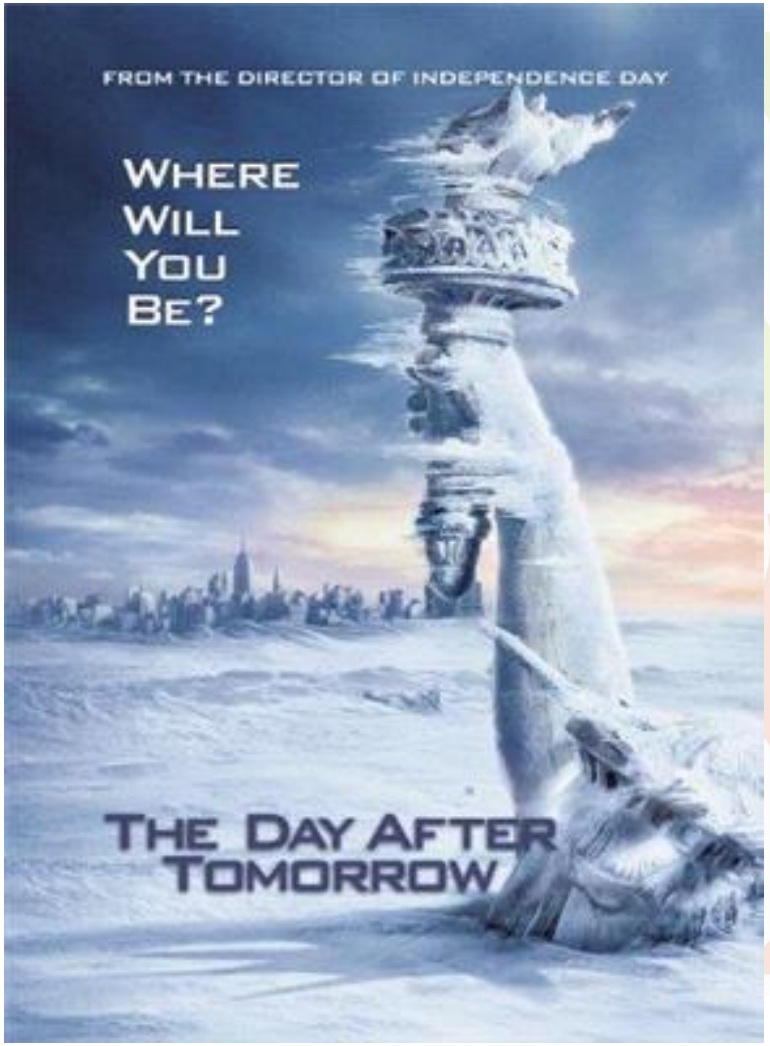
Framing effects: an example



Movie – The Day after Tomorrow

High expectations on the movies' influence
→ wake-up call for the public

→ Press releases, public meetings and panel discussions about the film's 'serious message

→ viewers experienced difficulty in distinguishing science fact from dramatized science fiction

→ film reduced viewers' belief in the likelihood of extreme weather events occurring as a result of climate change

→ Negative and improper framing

Sources: Hulme 2011

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Societal perspective on risk

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Influence of the media

Distortion of information

- Mass media influence sovereignty of interpretation
  - Experts dilemma
- generalization of information
- sensationalization of the science
  - Dominance of negative messages

Sources: Schäfer 2012, Boykoff 2013, Renn 2014

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RAISING AWARENESS

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Awareness and consciousness

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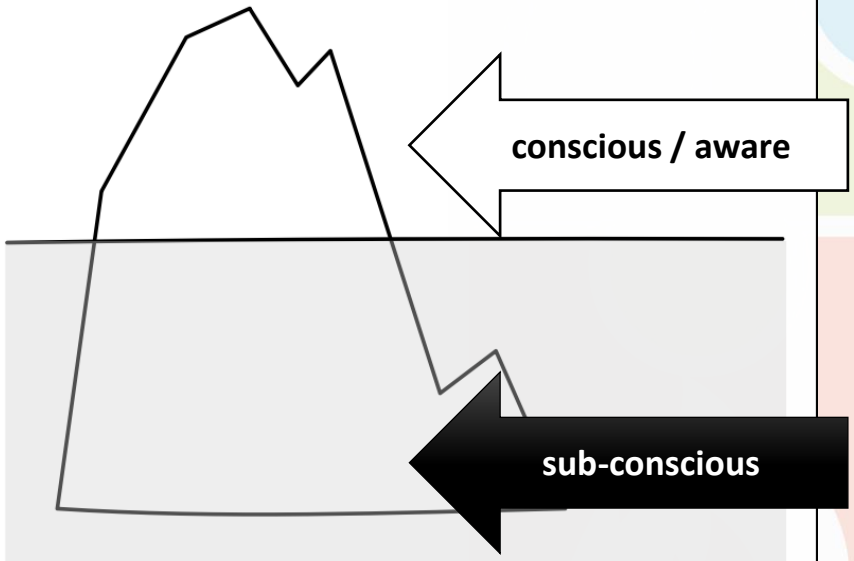
Idea and quality

The mind as an iceberg



Awareness:

"Awareness is the **ability to directly know and perceive, to feel, or to be cognizant of events**. More broadly, it is the state or quality of being conscious of something" (Wikipedia)

→**"awareness occurs at the interface between sensory processing and planning"** (Koch, 2004)

Consciousness raising /awareness raising:

"people attempting to focus the attention of a wider group of people on some cause or condition" (Wikipedia)

Sources: Koch 2004

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Knowledge = Awareness = Action?

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Is knowing better enough?

Deficit model: Unaware people do not know enough

Information campaign of the 80s

Drastic presentation of environmental problems
Overuse in “catastrophe pedagogics”

→ **“The catastrophe is faceless”**

Knowledge and Action are not necessarily connected

Cognitive dissonance

Coping strategies:

- Denial
- Changing meaning
- Changing a little

Sources: Wendisch 2004, Weber 2008, Hulme 2011, Stoknes 2014

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Components of awareness

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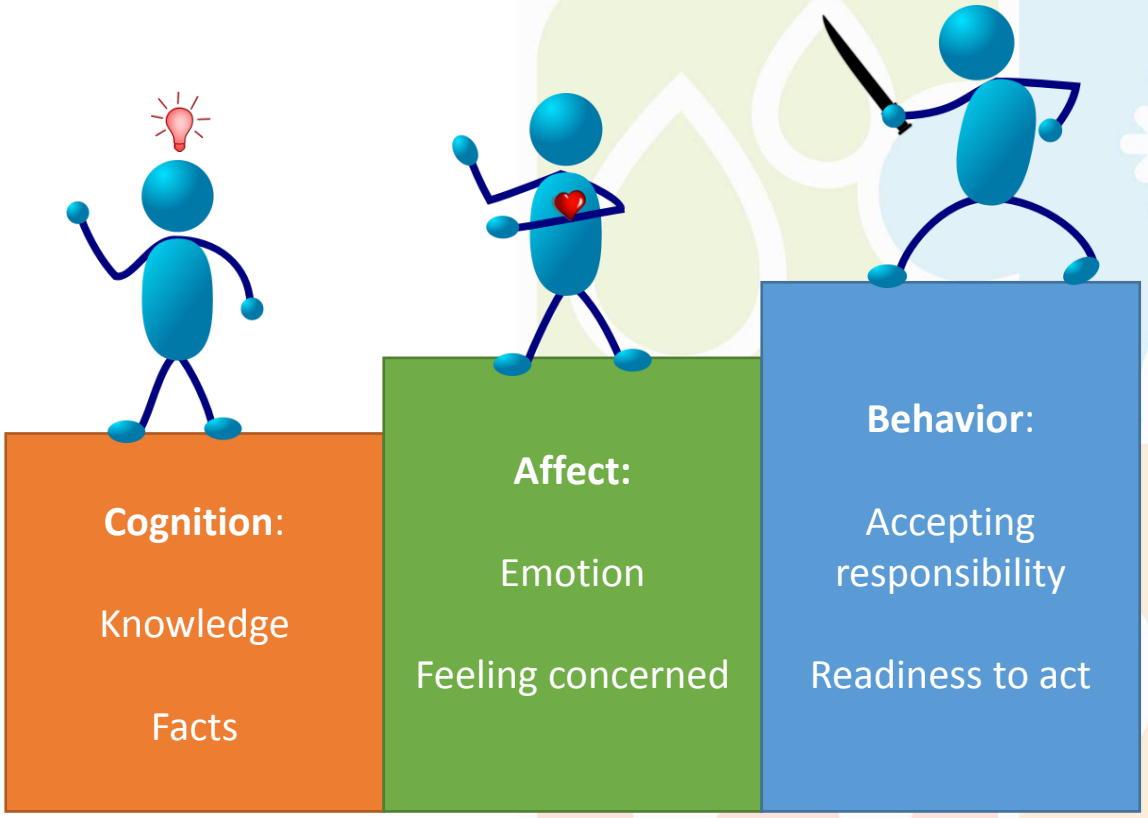
ABC-model



Cognitive dissonance = internal conflict of these components of awareness

Inconsistent attitudes towards an issue are not stable

Sources: Stoknes 2014,

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RISK PERCEPTION IN PRACTICE

Awareness-raising on all levels

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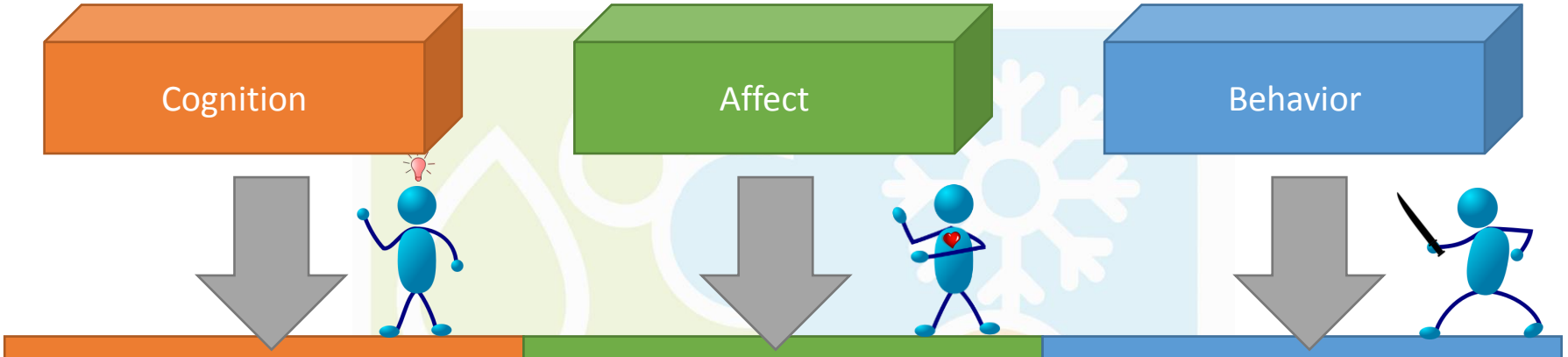

Knowledege provision:

- Providing knowledge on the right level
- Being open about and helping to understand uncertainty and complexity
- Finding the right medium

Causing concern:

- Including a personal reference
- sharing information on a joint risk in groups
- Addressing the sense of responsibility

Showing options for action:

- Providing easy models and “low regret strategies”
- creating incentives and a positive culture of action
- Change as the default option

Sources: Wendisch 2004, Taddicken and Neverla 2011, IPCC 2011, Reser and Swim 2011, Stoknes 2014, Weber 2017

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Creating perspectives

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The power of images (in our minds)

FRAMING

STORYTELLING

WORDING

Sources: Banduras 1977, Marx et al. 2007, Taddicken and Neverla 2011, Reser and Swim 2011

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Creating perspectives

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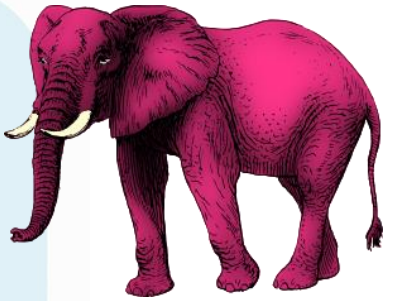
Wording

- **Language is never neutral**

"illegal immigrant" ← → "humanitarian refugee"



- **It creates associations (conscious and unconscious)**

- **It affects decisions**

32 % patients died after operation
68% patients survived after operation

- **It distorts communication**

Terms that have different meanings for scientists and the public

Scientific term	Public meaning	Better choice
enhance	improve	intensify, increase
aerosol	spray can	tiny atmospheric particle
positive trend	good trend	upward trend
positive feedback	good response, praise	vicious cycle, self-reinforcing cycle
theory	hunch, speculation	scientific understanding
uncertainty	ignorance	range
error	mistake, wrong, incorrect	difference from exact true number
bias	distortion, political motive	offset from an observation
sign	indication, astrological sign	plus or minus sign
values	ethics, monetary value	numbers, quantity
manipulation	illicit tampering	scientific data processing
scheme	devious plot	systematic plan
anomaly	abnormal occurrence	change from long-term average

Sources: Slovic 1996, Hulme 2011, Somerville and Hassol 2011, Stoknes 2014,

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Creating perspectives

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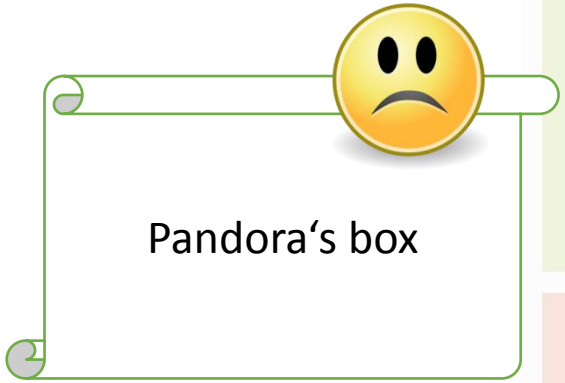
Framing

Pre-existing frames need to be matched with the argumentation

Which frames has my addressee?
Which frames activates readiness for action?

Triggering a new way of thinking



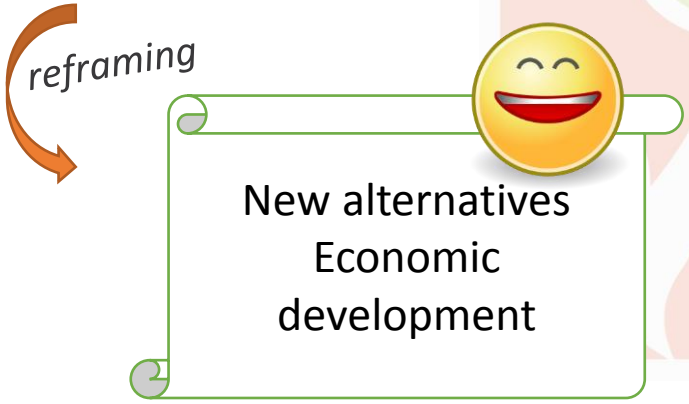


TABLE 7.1: *Examples of ways of framing climate change, and the audiences most engaged.*

Climate change frame	Audience engaged
Scientific uncertainty frame	Those who don't want to change
National security frame	As above, but now inspired to act
Polar bear frame	Wildlife lovers
Money frame	Politicians and the private sector
Catastrophe frame	Those who are worried about the future
Justice and equity frame	Those with strong ethical leanings

Source: Shanahan (2007).

Sources: Shanahan 2007, Nisbet 2009, Hulme 2011, Stoknes 2014

net risk work

Creating perspectives

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Storytelling

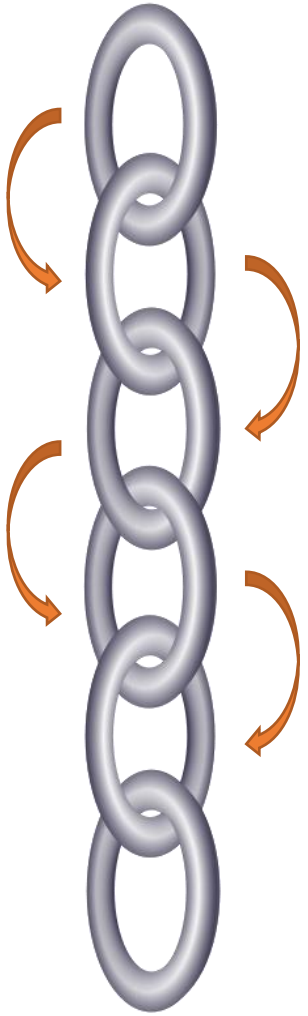
Explanation of linkages (importance of plausibility)

Visualization of cause effect-relationships

Danger of misuse!

Personal experience and development histories
How on earth did we get here?

Development of new ways
Offering future perspective



Sources: Renn 2014,´

net risk work

Working with professionals

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Considering responsibility

(Risk related) uncertainty can challenge one's own expertise

→ Importance of legitimacy over "right or wrong"
→ decision makers tend to make widely accepted and established decisions

Advice from experts to professionals
"textbook knowledge" vs. "practical realities"
"expert-based knowledge" vs. "experience-based knowledge"

Framing advice:

In uncertain situations **professionals are guides**
Creating the possibility for discussion and
negotiation concerning the **optimal path**

Sources: Lidskog and Sjödin 2014, Detten and Hanewinkel 2017

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Thank you

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