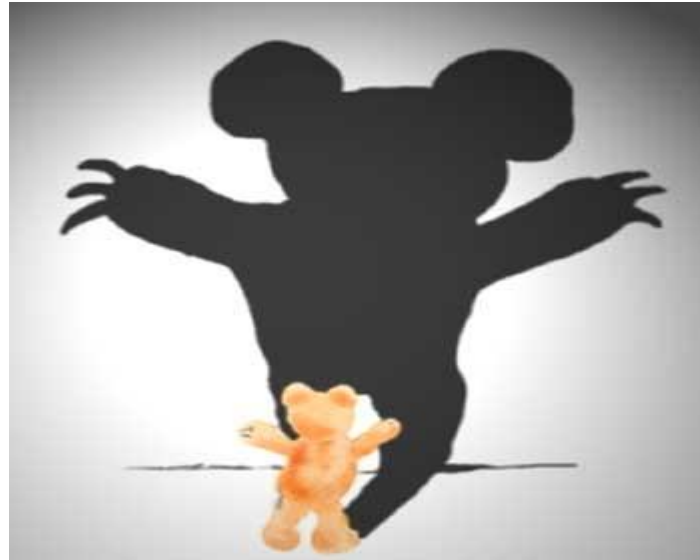


# The Risk Paradox

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## The Challenge of Systemic Risks



Ortwin Renn  
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# Misjudged Risks?

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# The good news

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172 of 193 countries in the world have rising life expectancy

<b>Average for countries with</b>	<b>1990</b>	<b>2009</b>
Minimal life expectancy	36	47
Medium life expectancy	68	72
Maximal life expectancy	79	83

# The bad news

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The gap in risk experience between rich and poor countries and between rich and poor people is increasing

## Number of death between

<b>16 and 60 per 10,000 (females)</b>	<b>1990</b>	<b>2009</b>
Low income countries	4670	5740
Medium income	1480	1190
High income	410	400

# The top killers in the world

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*High income countries:* smoking, drinking, unbalanced nutrition, lack of exercise (around 60% of all premature death)

*Medium income countries;* unbalanced nutrition, infections (including HIV), occupational health and safety, smoking, accidents, homicide

*Low income countries.* Infections (TBC, Malaria, HIV), diarrheal disease (unclean water), malnutrition, occupational health and safety

# Important statistical fact

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- Globally 2.3 million die due to work-related risks, more than those caused by war, malaria, traffic, earthquakes and other natural risks. The biggest killers cardiovascular diseases and cancer have a substantial component caused by work-related risks. ILO has estimated that globally 4% of the GDP is lost due to these risks
- *Worldwide, an estimated 1.2 million people are killed in road crashes each year and as many as 50 million are injured.*

Source: J. Takala 2014

# In contrast: Germany

## *Occupational Safety*

- 1960: 4.893 fatal accidents at work
- 2013: 478 fatal accidents at work
- In comparison Brazil: 12.239 (200 mio people)

## *Traffic Accidents*

1972: 20.895 fatal car accidents

2013: 3.339

*(Nigeria: 34 per 100,000; Germany 4 per 100,000)*

# Natural disasters

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*Average death toll per country per year: 376*

*High income countries: 180 (Europe: 22) per country*

*Medium income countries: 413*

*Low income countries: 944*

*Source: M.E. Kahn 2004*



# Risk Perception Paradox

**The safer people live they more  
they are worried about safety  
and risk**



# Risk perceptions

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73% of the German population believes that their life has become riskier and more dangerous over the last three decades, but only 42% of the Indian population

Concerns about growing risks are most widely distributed among middle income families, followed by high-income, followed by low-income families

Satisfaction with life: Gap between *expected* and *perceived* reality

# Principles of Risk Perception

- Human behavior is guided by perceptions, not by scientific knowledge about “facts”
- Perceptions are a well-studied subject of social science research: they differ from expert assessments, but they follow consistent patterns and rationales

# Risk Perception Orientations

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- *Simple causality models*
- *Reliance on trust where immediate experience is missing*
- *Amplification by virtual reality*
- *Confusion by plurality of truth claims*

# The Three Major Risk Challenges

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- *The intensity of human interventions into the natural environment*
- *The lack of adequate governance of collective actions*
- *The side effects of modernization and globalization*

# Human Interventions in Nature

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- *Since 1950 human influence on global geophysical cycles (Carbon, ...)*
- *Exceeding sink capacity for absorbing human induced waste (pollution)*
- *Land-use patterns that endanger biodiversity and sustainable living conditions*

# Governance deficits

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- *Inability to deal prudently with common resources (climate, biodiversity)*
- *Optimizing efficiency in partial markets over resilience and fairness*
- *Sustaining corrupt and ineffective governance systems*
- *Failure to resolve conflicts by peaceful means*

# Modernization side-effects

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- *Increasing gap between rich and poor: individually as well as collectively (richer is safer)*
- *High vulnerability to IT dependent systems (interconnectiveness)*
- *Loss of cultural identity and trust in the future*



# What can we do?

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- *Resurrection of welfare economics (socially and environmentally bounded market economies)*
- *New governance strategies combining effectiveness (experts), efficiency (corporate sector), resilience (governments) and fairness (NGOs) to achieve legitimacy*
- *Inclusion of more direct citizen participation in developing their lifeworlds*
- *More effective educational programs that make people understand their own biases and misperceptions and lead them to a better understanding of sustainable lifestyles*

# Quote:

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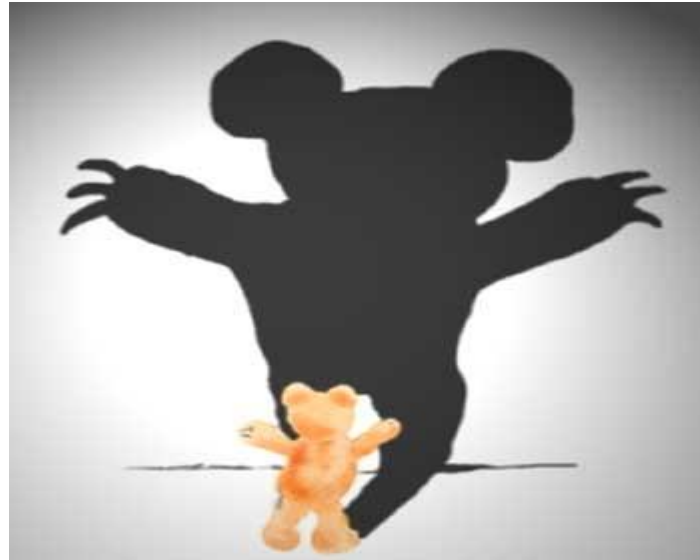
Sustainability is often misunderstood. It does not mean securing what we have. The focus is not on conservation but on innovation and development. The world needs change, yet this change must obey a different rationale, i.e., the paradigm of justice with respect to the present and the future generations...

*Kofi Annan*

# The Risk Paradox

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## EXTRA Slides



Ortwin Renn  
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# Risk Cluster: Pending Danger

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Public perception:

Representative of Cluster: “Pending Danger”

- Key characteristics
  - Low-probability, high-consequence risk
  - Sophisticated technology with lack of familiarity
  - Little time for warning and emergency measures
- High sensibility for indicators of human failures or organizational problems (high reliability)
- Concern about randomness of catastrophic events
- Risk aversion most frequent response

# Risk Cluster: Creeping danger

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Public perception:

Representative of Cluster: “creeping danger”

- Key characteristics
  - Long delay between exposure and effect
  - No possibility to detect the danger by human senses
  - Reliability on information from third parties
- Key variable trust:
  - If yes: (partial) risk-benefit balancing accepted
  - If no: request for zero risk (no benefits considered)
  - If maybe: orientation according to external criteria