GLOBAL RISK FORUM
GRF DAVOS

Introduction: The importance of integral risk management in the disaster cycle

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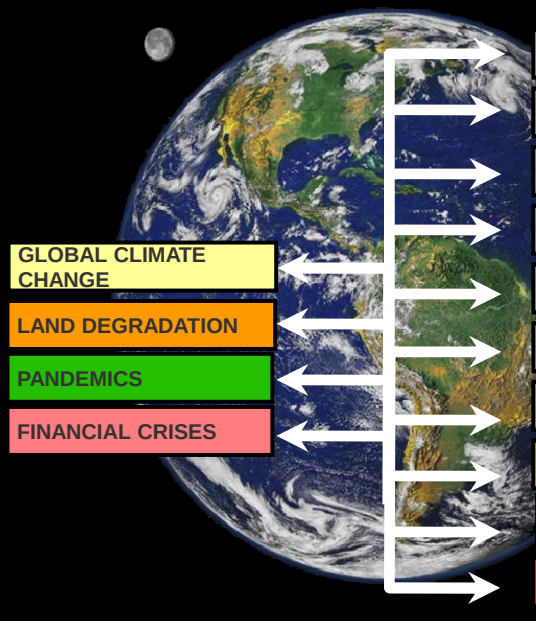
www.grforum.org

Overview

- Overview on risks and disasters from a holistic perspective
- How to cope with risks? The GRF Davos integral risk reduction and disaster management approach
- Who is GRF Davos?

Multi hazard/ multi risk approach needed



GLOBAL CLIMATE CHANGE

LAND DEGRADATION

PANDEMICS

FINANCIAL CRISES

FLOODS

SEVERE WINDSTORMS

EARTHQUAKES/ TSUNAMIS

DROUGHTS, DESERTIFICATION

LANDSLIDES

WILDFIRES

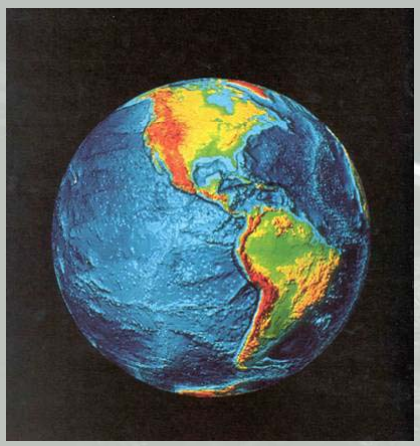
VOLCANIC ERUPTIONS

TECHNOLOGICAL HAZARDS

BIOLOGICAL THREATS

TERRORISM

Mean annual losses



- 100‘000 deaths
- 150 bn US $

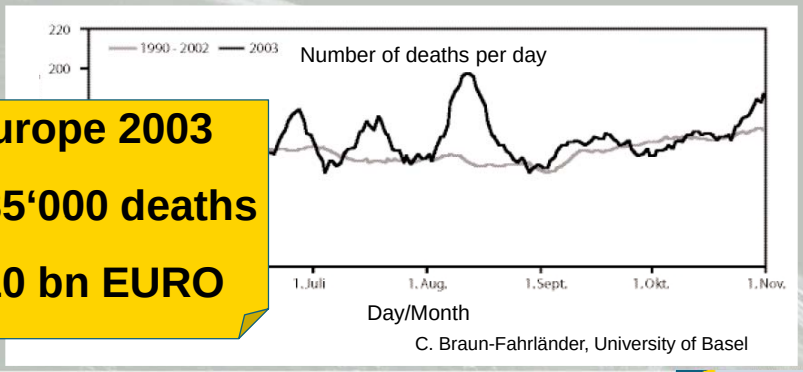
Gap between industrialized and developing countries

Social Injustice

Climate change will worsen the situation

Heatwave 2003 in Switzerland

- Number of deaths: approx. 1 000
- Economic damage due to a bad harvest: approx. 500 million CHF



Europe 2003

•35‘000 deaths

•10 bn EURO

Source: sc I nat Pro Clim – Forum for Climate and Global Change report Hitzesommer 2003 - Synthesebericht

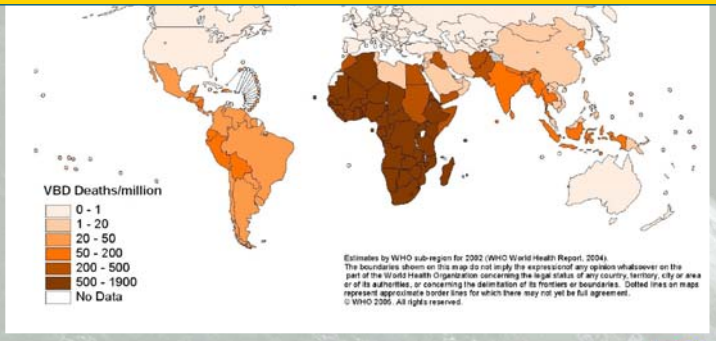
Pandemics: Number of worldwide deaths

- **Spanish Influenza Pandemic (1918-1920) deaths: ca. 50 millions** (*Johnson, Niall P. A. S. / Mueller, Juergen D. „Updating the Accounts: Global Mortality of the 1918-1920 „Spanish" Influenza Pandemic", Bulletin of the History of Medicine Volume 76, Number 1, Spring 2002, p. 105–115)*
- **Asian Flu (1957-1958) deaths: ca. 1 - 2 millions**
- **Hong Kong Flu (1968-1970) deaths: ca. 800**
- **Swine flu deaths (April 2009-?): >6100**
  (from 7 November 2009; WHO)

Seasonal Influenza: Number of deaths

- **Worldwide: 250 000 – 500 000** *(WHO)*
- **Europe: 40 000 in a moderate season**
  (European Centre for Disease Prevention and Control, Stockholm)

- **Malaria**: **1.2 million deaths/ yr (**mostly African children under the age of five, 90% of malaria cases occur in Sub-Saharan Africa.
- **Dengue fever**: w**orld's fastest growing vector borne disease** (found in tropic and subtropic regions).



Source: WHO

Technical disaster: Bhopal, India

When and where?
- 3 Dezember 1984 in Bhopal, India

What?
- Industrial disaster at a Union Carbide pesticide plant
- More than 40t methyl isocyanate (MIC) gas leaked.

Number of Deaths?
- At least 3.800 people were killed immediately.
- With 15.000 to 20.000 premature deaths reportedly occurring in the subsequent two decades

Health effects?
- causing significant morbidity and premature death for many thousands more
- 50.000 injured people
- 200.000 people were evacuated

Source: E. Broughton (2005). The Bhopal disaster and its aftermath: a review, Environ Health., 4: 6.
UNEP Disasters Database

Technical disaster: Seveso, Italy

When and where?

- 10 July 1976 in Seveso, Italy

What?

- Industrial disaster at a chemical plant, manufacturing pesticides and herbicides.
- „A dense vapour cloud containing tetrachlorodibenzoparadioxin (TCDD) was released from a reactor, used for the production of trichlorofenol.“

Number of Deaths?

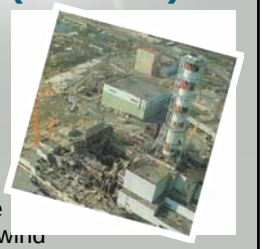
- -

Health effects?

- 2.000 were treated for dioxin poisoning
- 200 injured people
- 730 people were evacuated
- An immediate contamination of some ten square miles of land and vegetation resulted.

Source: European Civil Protection
UNEP Disasters Database

Technical disaster: Chernobyl, (UdSSR)



When and where?

- 26 April 1986 in Chernobyl, Ukraine

What?

- Nuclear accident at a nuclear power plant
- A steam explosion and fires released at least 5% of the radioactive reactor core into the atmosphere and downwind

Number of Deaths?

- 31 (actual number unlikely to be ever known)

Health effects?

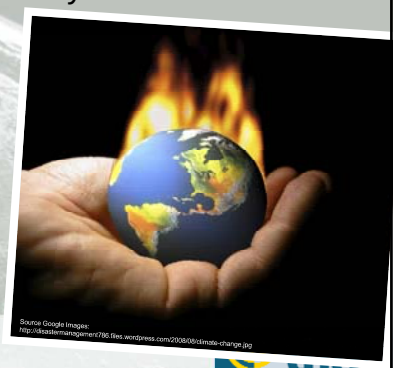
- Acute radiation syndrome (ARS) diagnosed in on-site people (47 deaths)
- „A large proportion of childhood thyroid cancers diagnosed since the accident is likely to be due to intake of radioactive iodine fallout from off-site children.“
- 299 injured people
- 135.000 people were evacuated

Source:World Nuclear Association
UNEP Disasters Database

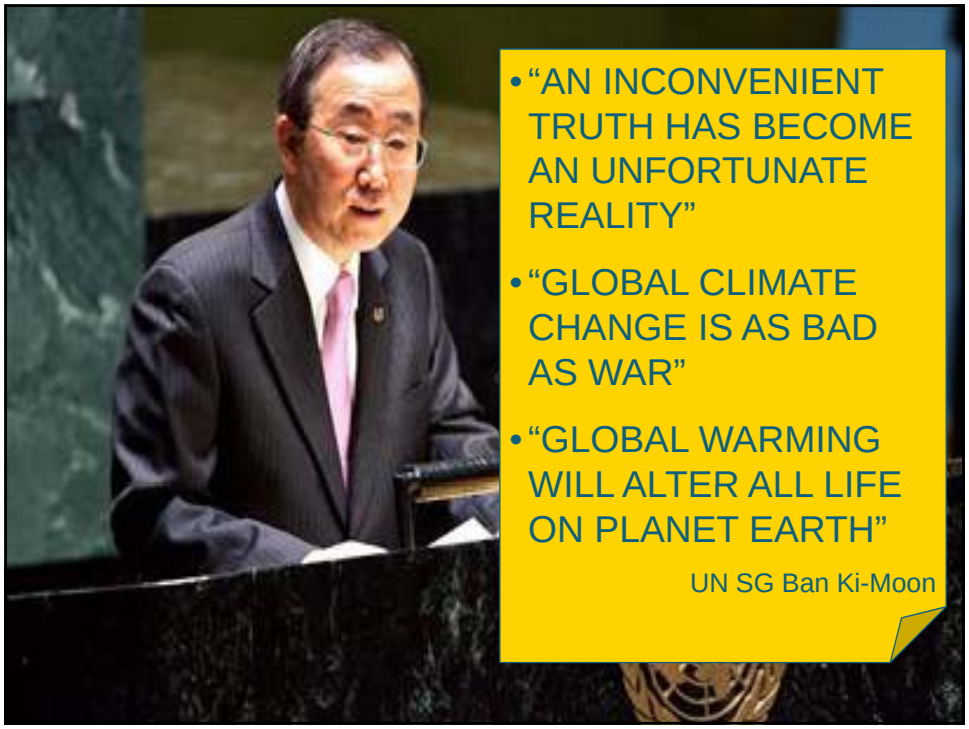
Climate Change

Climate change:

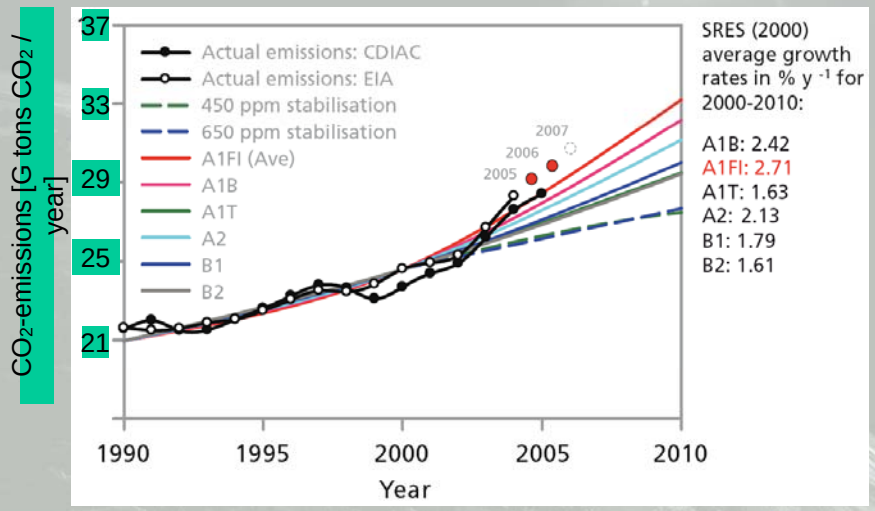
- attributed directly or indirectly to human activity that alters the composition of the global atmosphere
- in addition to natural climate variability observed over comparable time periods.



Source: Framework Convention on Climate Change (UNFCCC) Article 1 (1992) (http://unfccc.int/resource/docs/convkp/conveng.pdf):

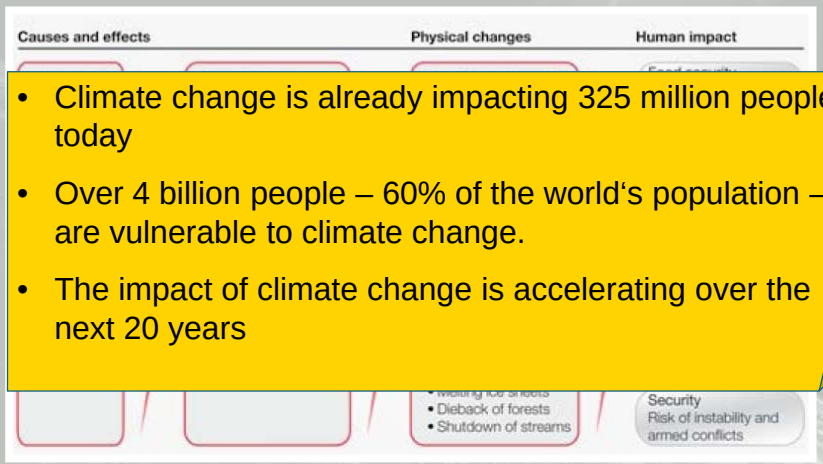


CO_2-Emissions rise faster than in the business as usual scenario (A1FI)



Raupbach 2009

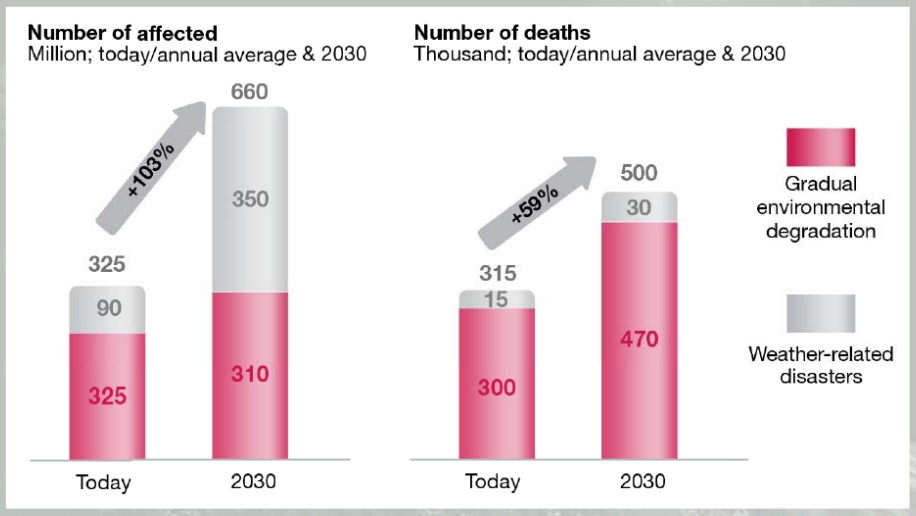
How climate change impacts people today and in the future



- Climate change is already impacting 325 million people today
- Over 4 billion people – 60% of the world's population – are vulnerable to climate change.
- The impact of climate change is accelerating over the next 20 years

Source: Climate Change – The Anatomy of a Silent Crisis, Global Humanitarian Forum 2009, Geneva

Climate Change - Impact



Source: W. Fust (2009), What will it take? Mitigation of Climate Change, talk at Global Humanitarian Forum, October 2009, Geneva

Climate Change – Outlook 2030

- Worldwide deaths will reach 500 000 per year
- People affected by climate change annually expected to rise to over 600 million
- Annual economic cost to increase to around $300 billion
- Climate displaced people to increase to over 70 million

Source: W. Fust (2009), What will it take? Mitigation of Climate Change, talk at Global Humanitarian Forum, October 2009, Geneva

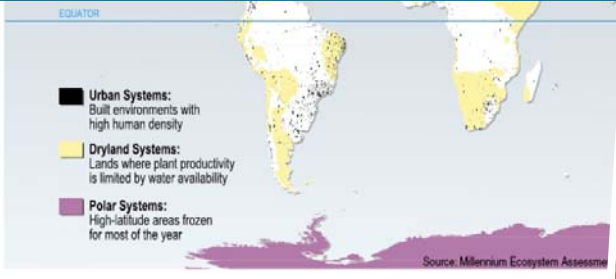
Climate Change - Outlook

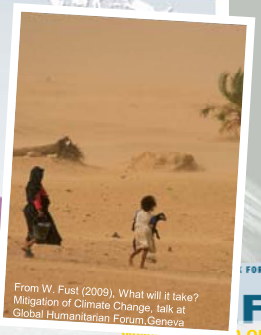
- **Africa**, Increased water shortages (up to 250 million people in Africa at increased risk of water stress in 2020);
- **Small Island Developing States**, Sea-level rise is likely to exacerbate inundation, storm surge, erosion and other coastal hazards, thus threatening vital infrastructure that supports the socio-economic well-being of island communities.
- **Asian megadeltas**, such as the Ganges-Brahmaputra and the Zhujiang: Large populations and high exposure to sea-level rise, storm surge and river flooding

Source: UNFCCC Factsheet: Climate change science - Regions that will be especially affected

Land Degradation – Facts

The **dry land belt encompasses 41 percent of the world's landmass** including the Sahara, the Middle East and Central Asia, and is to home over **2.3 billion people**





Source: UNCCD thematic fact sheet series No. 1 Climate change and desertification

Land Degradation – Desertification

- degradation of land primarily caused by human activities and climatic variations
- dryland ecosystems are extremely vulnerable to over-exploitation and inappropriate land use
- over 250 million people are directly affected
- about 1billion people in over 100 countries are at ris

Source: UNCCD http://www.unccd.int/convention/text/leaflet.php

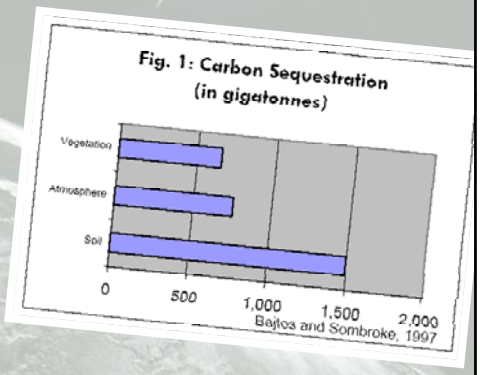
Aral Sea Kazakhstan Uzbekistan

Land degradation affects the quantity and quality of freshwater supplies.

Contributes significantly to water scarcity, food crisis, and internal displacement of people, mass migration, and social breakdown.

Land Degradation – Facts & Explanations

Soil carbon sequestration is an important and immediate sink for removing atmospheric carbon dioxide and mitigating global warming and climate change.



Source: UNCCD thematic fact sheet series No. 1 Climate change and desertification

Definitions
Environmentally induced migration

IOM Working definition

"Environmental migrants are persons or groups of persons who, for compelling reasons of *sudden* ***or*** *progressive change* ***in the*** *environment* ***that adversely*** *affects their lives* ***or living conditions, are obliged to*** *leave their habitual homes****, or choose to do so, either temporarily or permanently, and who move either*** *within their country or abroad****" (IOM 2007).***

How many environmentally induced migrants?

- Today: 24 million environmentally induced migrants worldwide (UNHCR 2002).
- By 2010: 50 million (Myers 2005)
- By 2030: 70 million (IOM 2008)
- By 2050: Estimates vary widely, 200 million becoming a widely cited estimate (IOM 2008)
- After 2050: Up to 700 million environmental migrants (Christian Aid 2007)

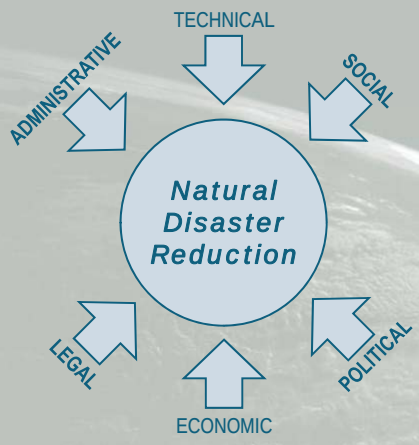
Multi hazard/ multi risk approach needed

Challenges

- Science and Technology

  for
- DRR
- Risk Reduction – Vulnerability Reduction and Resilience Increase – (Development Approach)
- Disaster Management - Preparedness, Early warning, Response, Recovery – (Humanitarian Approach)

S&T: Multi disciplines and sectors approach



Scientific
to be considered in its widest sense to include the "hard and the soft" sciences (natural, social, economic, health & engineering sciences,…)

Technology and Innovation
to include relevant matters of technology, engineering practice & implementation

Multi stakeholder approach in problem solving

- Science
- Education and training
- Technology and Innovation
- Politics
- Governments, Administration
- UN Organisations
- Developing agencies
- Lending banks (World Bank, IDB, ADB, etc.)
- NGOs
- Private sector (Public-private partnership)
- Practitioners
- Public, society as a whole.

Multi sectors and disciplines approach

Scientific
to be co...

Interdisciplinarity & transdisciplinarity needed

(early involvement of all stakeholders)

...clude relevant matters of technology, engineering practice & implementation

Overview

- Science and Technology
- **DRR**
- Risk Reduction – Prevention, Vulnerability Reduction– (Development Approach)
- Disaster Management - Preparedness, Early warning, Response, Recovery, Resilience Increase – (Humanitarian Approach)

Multi Measures Approach along the risk cycle in integral risk management

DRR - Challenges

- Lack of understanding of the substantial medium and long term benefits of effective risk reduction strategies (*„The benefits of prevention are not tangible; they are the disasters that did not happen". Kofi Annan Former UN General Secretary)*
- Represents a major challenge for low probability – high intensity events like rare earthquakes (Humanitarian logistics and response important).

DRR - Challenges

- Lack of effective means of bringing together S&T, private sector, administration, practitioners, society to exchange experience and lessons learned in risk reduction and disaster management
- Accelleration needed in the transfer of scientific knowledge to applicable know how
- Climate change adaptation CCA and DRR to be harmonized ($ 30 bn/yr).
- CC and DRR to be integrated in the UN MDGs (revision of targets, indicators)

DRR - Challenges

- **Resilience measures increase the capacity to reduce both direct and indirect economic losses resulting from disasters – most important for critical infrastructures.**
- Climate change adaptation CCA **and risk reduction/ disaster management (**DRR**) to** harmonize**.**

Global Risk Forum GRF Davos
Mission statement

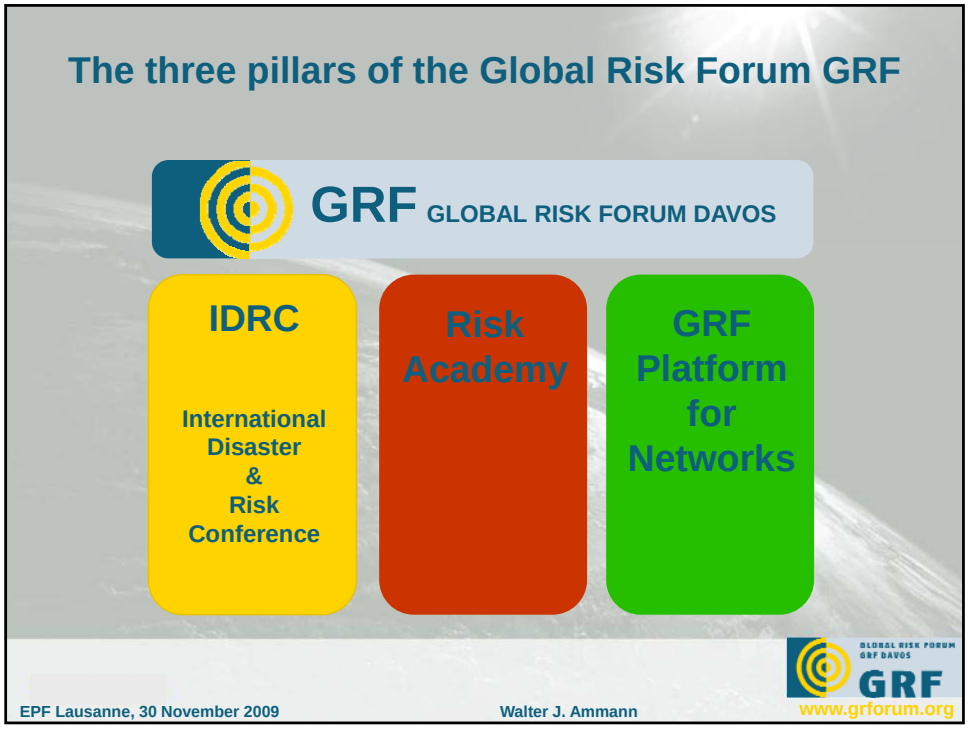
"GRF Davos through its various activities aims at serving as a Center of Excellence in knowledge and know-how exchange for the application of timely and appropriate risk management strategies, tools and practical solutions, thus reducing vulnerability for all types of risks and disasters to protect life, property, environment, critical infrastructure and all means of businesses for the world-wide community on a sustainable basis".

Knowledge alone does not lead to action!

The Motto:
"**From Thoughts to Action**" by closely linking practice, science, policy and decision making in the search for sustainable solutions.

Global Risk Forum GRF Davos
Main Goals

- To bridge the gap between science and practice
- To accellerate the transfer of scientific knowledge to applicable know how
- To promote the worldwide exchange of know-how and experience, and to provide guidance to scientific and technical work to provide advice and to make recommendations on priorities for scientific and technical attention
- To target solutions and promote good practice in integral risk management and climate change adaptation
- To stimulate the dialogue & innovation including promotion of good practice by providing and manageing a network for decision-makers, academics, practitioners and experts


The three pillars of the Global Risk Forum GRF
GRF GLOBAL RISK FORUM DAVOS
IDRC
International Disaster & Risk Conference
Risk Academy
GRF Platform for Networks
EPF Lausanne, 30 November 2009
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„From Thoughts to Action“
Thank you for your attention!
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