



ICCL  
international  
committee on  
contaminated  
land

October 4-5, 2011 • Washington, DC Metro Area



# Towards Sustainable and Risk-Informed Land Management in Europe

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**CULTURE**

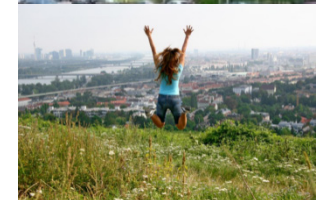


**NATURE**

ENVIRONMENT  
AGENCY AUSTRIA **umwelt**bundesamt<sup>u</sup>

## How we started and developed up to now

- ❑ early 80ies: public scandals
  - ➔ zero risk tolerance (no uncertainties)
  - ➔ multifunctional use: sites, soil & groundwater
- ❑ Can we afford it? How clean is clean?
  - ➔ land-use related soil/environmental quality
- ❑ What do we need to achieve? When?
  - ➔ ***Risk-Based Land Management***
- ❑ How do we achieve our goals?
  - ➔ ***sustainability***
  - ➔ ***environmental friendly practices***



# Discussing needs

## Old and new challenges ask for innovative thinking

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... managing contaminated land ...

- geographical scales** – site, region, river basin, globe?
- time scales** – urgent (now!), mid- or long-term?
- environmental friendly or/and sustainable?**
- stakeholder involvement** – whom, how, when?
- wider management frames and constraints**
  - **Financing** (polluter-pays-principle, land markets, role of privatization, p-p-partnership and/vs. state aid)
  - **Long-term Liability** (If and how to share it?)

# Learning by identifying deficits

## IRGC report: Risk Governance Deficits (2010)

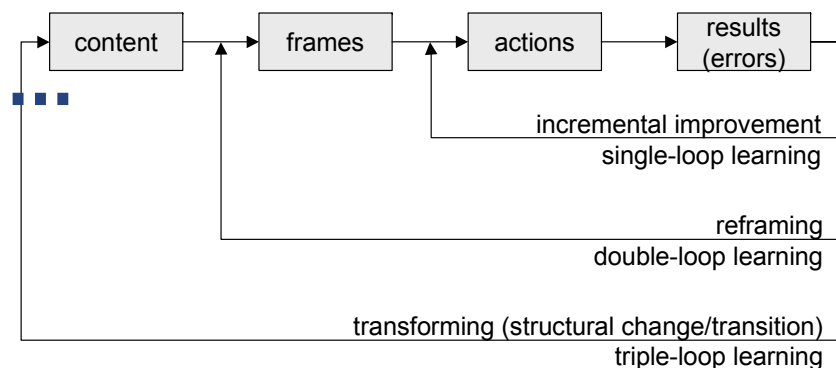
➤ **Cluster A: 10 deficits related to assessing and understanding risks**

❑ **Do we share a common understanding?**

➤ Cluster B: 10 deficits relating to managing risks

**DO WE NEED TO LEARN TO ...**

- improve our actions?
- clarify new frames?
- transform structures?



**"TRIPLE-LOOP-LEARNING"**

# Understanding “risk” as a concept?

## ◆ Use by different disciplines

- e.g. toxicology, engineering, social sciences ...

## ◆ How it relates with ...

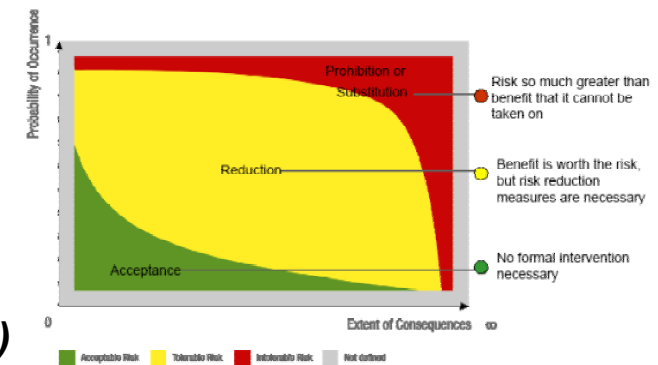
- uncertainty, “hazard” and “safety”

## ◆ risk **acceptance** / **tolerability**

- e.g. traffic-light-model (*IRGC, 2005*)

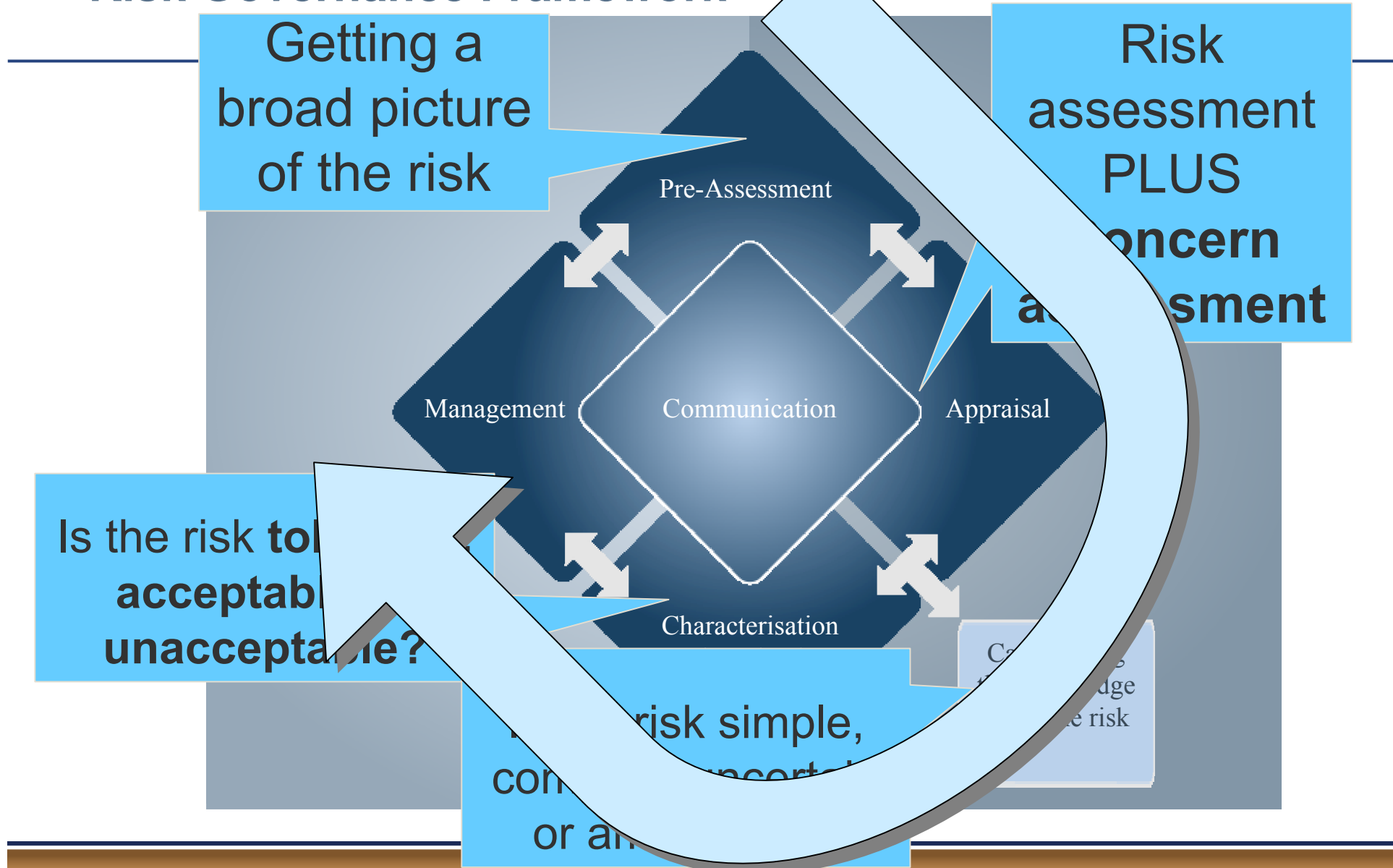
## ◆ Common elements:

- **SOMETHING WE VALUE**
- a negative consequence (harm, loss or damage)
- the probability of occurrence,
- an algorithm to aggregate & **contingency (choices!)**



# WHITE PAPER ON RISK GOVERNANCE (IRGC, 2005)

## Risk Governance Framework



# Understanding “sustainability” as a concept?

## Wide variety of perspectives

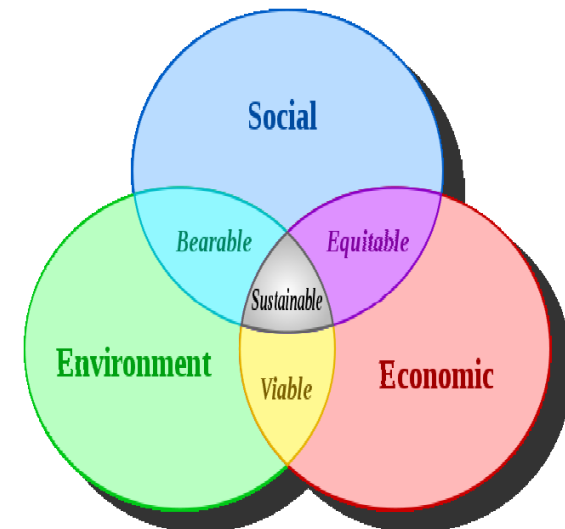
**Germany** (roots back to 15<sup>th</sup> century and forestry)

... describes the use of a regenerating system in such a manner, that this system conserves its fundamental capacities and its stocks may be regenerating naturally.

**U.S. America** (E.O. 13514; 2009)

“... to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations.”

'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs'  
(1987, Brundtland)



# Risk and Sustainability

## What's common? What's different?

	<b>Risk</b>	<b>Sustainability</b>
<b>origin / use</b>	economy / science	ecology / policy
<b>based on ...</b>	a mental construct	an ethical construct
<b>objective</b>	transparency	fairness
<b>Important</b>	<ul style="list-style-type: none"><li>• single target</li><li>• accountability</li><li>• effectiveness</li></ul>	<ul style="list-style-type: none"><li>• multi-objective</li><li>• interdependency</li><li>• efficiency</li></ul>
<b>question</b>	Should we act?	How can we act?
<b>support to ...</b>	better decisions	better action
<b>strategy</b>	prevent or limit	synergy

# Risk and Sustainability

## How to make it complementary?

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### Clarifying ...

- ◆ objectives (values)
- ◆ system and system boundaries
- ◆ principles
- ◆ milestones along the land management process
  - understanding risk prepares a judgement
  - sustainability prepares management actions
  - risk & sustainability control implementation

### WATCH OUT:

- ◆ **Not trading risks against sustainability!**

# What we need to enhance ...

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## **GOOD “GOVERNANCE”**

- ◆ Deals with identification, assessment, management and communication in a broad context
- ◆ includes all actors, rules, processes and mechanisms
- ◆ principles are: transparency, effectiveness and efficiency, accountability, strategic focus, equity and fairness, respect for the rule of law, political and legal feasibility, ethical and public acceptability

## **MANAGING “LAND” (resources, soil & groundwater)**

- ◆ matching human needs to natural capacities
- ◆ crossing geographical and time scales (site to globe and back; short-, mid- and long-term)
- ◆ promoting synergies, avoiding irreversibility

# Understanding our frames ... ENVIRONMENT AGENCY AUSTRIA **umwelt**bundesamt<sup>U</sup> ... to prepare better decisions (2<sup>nd</sup> loop)

## CONCEPTUAL FRAMEWORK

- ◆ Risk-Based Land Management
- ◆ Sustainability: SuRF UK & NICOLE
- Governance: Risk and Sustainability



## ANALYTICAL TOOLS (aiming to simulate different choices)

- ◆ simple indicators (e.g. carbon footprint, specific energy use)
- ◆ complex environmental accounting/balance
- ◆ matching economic and ecological balances & organising stakeholder discourse

## METRICS (aiming to condense simplified information)

- ◆ organising complex information to provide the complete picture, e.g. **Environmental footprint**
- ◆ use simple things creating impacts, e.g. **Carbon footprint**

# Improving our actions ... ... to enhance efficiency (1<sup>st</sup> loop)

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## ✓ **Greening Remediation**

- ✓ minimizing the environmental footprint
- ✓ adapting and contributing to CO<sub>2</sub>- and **energy-saving**

## ✓ **Practicing Synergies**

- ✓ risk management-recycling-renewables
- ✓ organised at regional scales
- ✓ optimizing engineered solutions & “working with nature”

## ✓ **Sustainable/Green Technologies**

- ✓ not a single technology but a fan/variety of technologies
- ✓ identify typical routine applications (small, wide-spread sites)

**WATCH OUT**: time frames often drive cost & ecology!

# Need for a Triple-Loop?

## Transforming towards better Governance ...

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### RISK-INFORMED (transparent and accountable)

- ◆ natural capacities and ecosystem services (soil/sediments-waters-atmosphere – from local to global - sites & planet) and
- ◆ societal system and processes (human well-being)

### SUSTAINABLE (fair, environmental friendly and participatory)

- ◆ corporate responsibility from local to global (“bottom-up”)
- ◆ social learning (triple-loop-learning: improve, reframe, transform)
- ◆ structured strategies to act on complexity, uncertainty, ambiguities
- ◆ options & scenario-thinking (anticipating different futures)
- ◆ from BAT to NEXT (‘next’ environmental technologies – “factor 4”)

**→ enabling society to benefit from remediation while  
minimizing negative consequences**

# IMPROVING PARTICIPATORY PROCESSES STAKEHOLDER INVOLVEMENT (IRGC, 2005)

			Affected stakeholders	Civil society
Actors			Affected stakeholders	Affected stakeholders
		External Scientists/ Researchers	External Scientists/ Researchers	External Scientists/ Researchers
	Regulatory bodies/industry experts	Regulatory bodies/industry experts	Regulatory bodies/industry experts	Regulatory bodies/industry experts
Type of participation	Use existing routines to assess risks and possible reduction measures	Maximise the scientific knowledge of the risk and mitigation options	Involve all affected stakeholders to collectively decide best way forward	Societal debate about the risk and its underlying implications
Dominant characteristic	Simple	Complexity	Uncertainty	Ambiguity

As the dominant characteristic changes, so also will the type of stakeholder involvement need to change



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## 2012: SUSTAINABILITY CONFERENCE

### November 2012

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# THANKS FOR LISTENING

## Questions are welcome!

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