

Workshop Report

1. Purpose of this Document

This report summarizes the discussions and results of a workshop on the challenges of risk governance which was conducted by the International Risk Governance Council (IRGC) and took place on 13/14 November 2004 at the Allianz Center for Technology (AZT) in Ismaning, Germany. The report does not provide a chronological account but, instead, is structured in an order which aligns with the major issues and proposals.

The main objective of the workshop was to compile and develop thinking and appropriate actions that will support IRGC's formulation and publication of a comprehensive and integrative framework – or taxonomy – for the assessment and management of major human-induced risks. The workshop participants comprised experts who have worked on such taxonomies and/or are “problem owners” facing the challenge to actually deal with risk, and were drawn from a range of academic disciplines, from both private and public sectors as well as from various geographic regions. While a list of participants as well as the workshop programme are included in the annex (à see p. 14 and p. 17, respectively), this report refrains from attributing to workshop participants their individual contributions.

It is important to note that the perspectives of workshop participants were very diverse, both before and after the workshop. While, during the workshop, there undoubtedly was a certain degree of convergence in some areas, this report does not claim to represent a view which is consistent across the group of participants. Instead it compiles the different viewpoints encountered – thereby basically respecting each participant's use of language. The resulting seemingly inconsistent use of terms should thus be viewed as an illustration of the different ways in which the same terms were actually used by the various participants.

For easy reading of this report, concrete suggestions as to how to take forward and amend the proposed framework and its component parts have been marked by a grey-coloured frame.

2. Workshop Goals

The workshop was designed as a key input to, and significant part of, IRGC's project “Basic Concepts of Risk Characterisation and Risk Governance”. The workshop's specific objectives were:

- i.) To collect and discuss existing concepts of risk characterisation and risk governance, and, particularly, to critique and elaborate them further;
- ii.) To obtain comments and guidance from the workshop's participants as to how to integrate these concepts into a single cohesive whole – a comprehensive framework for risk governance;
- iii.) To receive advice on the project's next steps.

3. The Need for a New Approach to Risk Governance – Discussion of IRGC's Mandate

A spontaneous and important addition to the workshop programme took the form of a short debate on IRGC's mandate. Prior to the debate IRGC's Founding Rector gave an outline of IRGC's **presumed focus** which is thought to be both on emerging risks with trans-boundary effects and on existing risks experiencing major changes with respect to causes, effects,

pathways or risk targets – with both requiring international cooperation and governance efforts as well as the involvement of political and private actors from different sectors.

Additional specifications made it clear that the risks IRGC is primarily interested in:

- Ø are created or highly influenced by human actions – this, however, does not preclude natural hazards from IRGC’s focus under the condition that human actions make a difference with regard to risk causation, mitigation and adaptation;
- Ø are driven by technology, products, regulation, life-style;
- Ø have potential risk targets ranging from classic health, safety and environment to the disruption of services as well as broader societal disruptions;
- Ø are not already well taken care of, for instance by WHO and/or other organisations.

A practical constraint in this respect derives from the fact that, in order to be able to conduct projects, IRGC is dependent on (multiple-source) funding. Realistically this requires the existence of distinct “problem owners”, since it is they who are supposedly the people with the relatively highest potential willingness to provide funds. IRGC does, however, not intend to create deliverables for specific groups only – rather, it IRGC envisages for its products a broad outreach across different groups, sectors and countries. An example in how to make an important contribution beyond individual communities can be seen in the work of the International Commission on Radiological Protection (ICRP).

While the overall focus of the organisation allows for several aspects of risk in which in-depth knowledge can be built up, IRGC’s structure suggests that it give particular weight to, and be at the cutting edge of, a governance perspective and corresponding issues. A major challenge will thus involve balancing the development of this perspective with the speed of innovation, technological development and global change.

The ensuing discussion can be summarised as follows:

- Ø With regard to emerging technologies IRGC should provide a neutral and objective assessment of both the negative consequences of associated risk(s) and the benefits and opportunities the technologies offer, as well as high-quality guidance for appropriate governance strategies and actions.
- Ø While there is clear consensus on the need to tackle multi-dimensional emerging risks with large-scale effects, multiple stakeholders and the potential to cause wide-ranging concerns and outrage, it is questionable whether IRGC should concentrate on these risks exclusively. One can think of a number of **additional risks** which are worthy of inclusion within IRGC’s focus:
 - ‘Routine risk’ or traditional risks such as tobacco, automobile accidents and malaria are utterly prevalent but nobody really seems to care about them. Often there are no simple solutions to these risks and it is therefore important that they get more attention.
 - Natural hazards are in urgent need of better international governance, in particular as regards their long-term effects.
 - If IRGC’s goals include tackling risks which are not already “covered” by other institutions, low probability high consequence risks such as, for instance, asteroid collisions, strange-lets and global warming seem to be a good starting point.
 - Hydrogen might also be an interesting field to look at since, at the EU level, major research efforts are currently being made to build a “hydrogen economy”.
 - Security threats (terrorism) as well as nuclear non-proliferation (uranium enrichment) require global risk governance strategies as well.
- Ø IRGC’s governance structure should take into consideration **corporate risk management** and in particular corporate reactions and coping mechanisms such as insurance and liability.

- Ø The concept of governance implies co-operation between different stakeholders and IRGC's approach has by all means to be **inclusive and open to all actors involved** at all stages if it is to gain broad credibility. Governments, private sector business, international organisations and NGOs are not the only stakeholders to take into account; there equally has to be a strong focus on public-private partnerships as well as the 'end-users', normally the general public.

4. Terminology

The presentation of workshop paper No.2 "Taxonomy, Structure and Terminology of Risk Assessment and Risk Management" led to a discussion with an initial focus on the necessity of a common terminology and on the short review of existing work conducted in this respect. The following comments were made:

- Ø Is terminology really that much an issue of intellectual debate or is it simply about devising an appropriate and consistent set of key terms for an organisation's particular purposes which would then have to be disseminated along with each of the deliverables generated by that organisation?
- Ø Food and chemicals (toxic substances) should not be omitted in the review of existing terminology since these are areas which are well regulated and where one is legally bound to certain definitions (eg EU regulation). The freedom to adapt new definitions can therefore be limited for some stakeholders of a particular risk.
- Ø Instead of the term "damage", the more neutral term "consequences" should be used.
- Ø A clear distinction between the terms 'risk' and 'hazard' should be introduced.

Break-away groups then discussed in more detail the questions as to whether the workshop can agree on a number of risk-related terms, including a hierarchy of terms, and whether the terminology framework proposed in the background paper is universal and flexible enough to deal with different kinds of emerging risks. [In so doing, workshop participants did not necessarily use the "same language". Rather, the same term was at times used by different participants to convey what were obviously different ideas, while on other occasions different terms were employed to express what was in all probability the same concept. This is reflected in the following comments from the break-away sessions.](#)

Results of Discussion – Group A:

- Ø The major focus point of the taxonomy should be on how informed decisions are made in a democratic society. In particular with regard to risk assessment, functional wording would be preferential to technical jargon. IRGC should even consider avoiding the term 'risk assessment' altogether since it comes with the hidden assumption of a linear and supposedly objective process. However, the assessment is never independent of the purpose of the ensuing risk management decisions and unless you know what you are concerned about and what needs to be changed, a generic assessment might not even be helpful. There are situations in which other approaches or procedural steps might lead to better and faster solutions: in fact, very often expensive assessments are being done but the major concerns or decision dimensions have been missed or ignored. It is thus important not only to "get the science right" but to "get the right science". In contrast to this, any functional wording could entail breaking particular concepts and processes into operational elements and component parts (eg functions) on the basis of which everyone could use their own chosen terms and names as long as there is a consensus on the basic tasks a system needs to fulfil.

- Ø A sort of translation guide should be developed in order to enable application of the broad framework to specific situations.
- Ø Both public and private actors should find their perspectives and concerns “represented” within a particular terminology, which therefore has to be integrative and inclusive.

Results of Discussion – Group B:

- Ø Instead of one overarching language, there are many risk languages or ‘dialects’ and the reality is that one needs to live, and be able to cope with, such pluralism. Vice versa, it is legitimate to choose one language for one’s own purposes.
- Ø A proposal for a linear model for looking at and dealing with risk involves the following terminology:
 - Scoping (framing)
 - Hazard Identification (gathering concerns about potential harm, incl. identification and classification of evidence)
 - Risk Assessment
 - Risk Analysis
 - Risk Evaluation (weighing outcome of assessment against risk acceptance criteria; assessing the availability of ready substitutes)
 - Development of risk management options
 - Selection of options
 - Implementation

Results of Discussion – Group C:

- Ø There is a clear need for facilitation of discourse among disciplines, sectors, cultures, agencies, actors. IRGC, for the purpose of conducting its own projects should therefore commit itself to a limited number of distinct terms. Broader outreach could be gained by participating in a current European project which aims to provide a comprehensive and easily accessible multi-lingual ‘risk glossary’ (à for more information see chapter 8, page 11). As a means of facilitating a common understanding, and communication, between different risk communities such a glossary would not only help to translate different risk-related terms but would equally point out different meanings and uses of the same term as well as different terms having the same intended meaning – thus enabling varying communities or the stakeholders of a specific risk situation to talk to each other in the same language.
- Ø The existing proposal of the IRGC for an overall process and respective terminology should be changed, whereby it is suggested that the broad encompassing term for the process is ‘risk governance’. The following terms should be used for the elements of the process:
 - Risk Assessment
 - hazard identification (scoping, framing; impacts of activity)
 - risk estimation (probabilities, damage, vulnerabilities, resilience, transgressive effects, uncertainty)
 - risk characterization (perceptions, fairness/inequity)
 - Risk Management (as is)
 - Risk Communication

Results of Discussion – Group D:

- Ø IRGC needs a common glossary to ensure understanding about its model for identifying, assessing, managing and monitoring risk. Once a decision has been made in this respect, IRGC is to stick to it and potential deviations will have to be justified.
- Ø The evolving terminology should be tested by those who are supposed to work with it.

The plenary discussion following the group session resulted in the following **suggestions**:

- i.) There is a clear need for a body like IRGC to agree on key terms (a common language) as a basis for a shared understanding within its own activities. Such a set of terms has to be consistent, clear and limited and should be easily adaptable to specific projects. IRGC should thus develop a terminology (including a hierarchy between terms) and test it by applying it within different projects.
- ii.) The development of a well-considered terminology entails taking into account terminological work which has been conducted in the areas of, inter alia, food, chemicals and nuclear. Of particular, but not exclusive, interest are efforts undertaken at a European level. In general, however, it might be necessary for IRGC to limit a comparative review of terminology to meta-studies, reviews or anthologies such as the ones done by ISO, WHO, the German Federal Institute for Risk Assessment as well as the US National Academies of Science.
- iii.) There is a common understanding of 'risk governance' as a truly generic and overarching term. The ambiguities of the terms 'risk management' (as implementation of a risk management strategy vs. as a whole cycle which includes identification, analysis and evaluation, management and monitoring) and 'risk analysis' (in turn understood as the risk assessment phase or the overall cycle) can thus be mitigated by using 'risk governance' instead. One needs to be aware, however, that this term will include more than just the main phases of a risk process which usually amount to risk assessment and management.
- iv.) It is proposed that IRGC co-operate with the originators of a European project (WIN-MULTH) which is currently going on in the area of risk terminology.

5. Approach(es) to Characterising and Managing Risk

In addition to the discussion focussed on terminology, the presentation of workshop paper No.2 led to a discussion of the completeness of the review of existing approaches to characterising (and managing) risk as well as the appropriate structure of the overall risk process. Whereas many of the comments raised by the break-away session dealing with terminology implicitly touch on these issues, a number of specific comments were made ([with the same caveat about consistent use of terms applying as in chapter 4](#)):

- Ø Should **framing and scoping** be a separate step that guides risk assessment or, alternatively, be the first phase of the assessment process? On the one hand, the assessment is needed to provide impartial information so that informed decisions can be made – ideally this information should be independent and not subject to constraints imposed by the approach to risk management. On the other hand, risk assessment needs to be directed towards the concerns that decision makers have, otherwise it may be irrelevant or simply a waste of money. This problem becomes more complex when potential consequences affect people differently: Whose concerns should we act upon? How to make trade-offs?
- Ø Does it make sense to **separate risk assessment from risk management**? The answer to this question differs in the US and in Europe. Whereas risk assessment is usually considered the task of science (and science is supposed to derive these results

independently), the management options are often chosen, and implemented, by politics, which in turn is likely to be influenced in one way or another by the expected opposition of the general public and major advocacy groups. It is therefore absolutely crucial how scientific evidence is presented to the public – in the extreme case distorting the evidence can be a means of changing the politics.

- Ø Open and transparent communication about risks can, in some cases, trigger even bigger risks (cf. the loss assessment of the 1993 bombing of the World Trade Center). The question about the **adequate risk communication strategy** in specific circumstances can therefore be extremely difficult to answer.
- Ø The proposed model or approach clearly has to be positioned as a **non-linear approach** which includes feedback loops. Making this approach dynamic rather than keeping it static is all the more important, since, in fact, every risk challenge is dynamic in the sense that it requires in one way or another ad hoc risk management activities.

Workshop participants then made the following **suggestions**:

- i.) The existing proposal for a structured process lacks some elements. These include:
 - potential benefits, or the opportunities, related with risk and, in particular, a thorough risk benefit analysis (economic impacts of a risk)
 - attitudes towards risks (eg in developed countries as opposed to less developed countries) as well as behavioural and sociological impacts
 - different cultural yardsticks for judging the acceptability of risks
 - social preferences
 - emotional factors, including history
- ii.) The risk assessment phase should include scenario-planning as well as risk-risk comparisons.
- iii.) Apart from the literature on the ‘commons’, missing areas of the review include hazardous technologies (including nuclear and transport of dangerous goods), natural disasters as well as appropriate technologies. As far as “geographical coverage” of the review is concerned, approaches from the Asian hemisphere, Eastern Europe and Russia, South America as well as Africa have not been given consideration so far. There is also the question whether the review should not be broadened to highlight differences with regard to methodology (eg exposure assumptions).

6. Risk Management Strategies

The presentation of workshop paper No.3, “Risk Management: Phases and Strategies”, was followed by a discussion which included a number of comments:

- Ø A couple of questions directed at **terminological clarity** included the following:
 - Should ‘crisis-based management’ be differentiated into crises which can be expected and anticipated as opposed to crises which come as a total surprise, since each requires a significantly different response? Is the second type (anticipated) of crisis dealt with by precaution-based management or can one imagine the use of scenario-planning within the crisis-based risk management strategy?
 - Assessment-based management as a term seems a little confusing when one takes into account a risk process within which management is the sequential step which comes *after* risk assessment. Could this strategy type be named ‘risk-based’ or ‘risk-informed’ management?

- All of the 6 risk management strategies outlined are precautionary in one way or another. Would it therefore be better to have degrees of precaution within all the proposed strategies rather than labelling precaution as a specific strategy?
- Ø The risk management strategies within this typology are not intended to be mutually exclusive. A risk can have several different characteristics which prevent it from being neatly compartmentalised within one strategy – indeed, a risk situation requires the application of more than one or a **mix of strategies**. Within this set of strategies the boundaries between the individual strategies or regimes need to be clearly defined.
- Ø There is a certain danger that “routine risk” – understood as large base risks such as tobacco, automobile accidents or malaria – is ignored in the face of novel and newly emerging risks. Therefore, many of the methods mentioned for other **strategies are also important for routine risk**. This is particularly true for the analysis of risk-risk trade-offs.
- Ø The evaluation of the proposed risk management strategies and the ensuing selection of an appropriate mix both need to be **compatible with national and international regulations**. Risk benefit analysis, for instance, is legally prescribed within any EU regulation dealing with risk.
- Ø Can **safety principles** be factored into this typology and how do they relate to the broader concept of a risk management strategy or regime?

The following **suggestions** were made by workshop participants:

- i.) Potential ambiguity in terms used for the typology should be removed.
- ii.) Another (complementary) regime classification to consider would include the following categories: goal-based, result-based, performance-based.
- iii.) This typology of risk management strategies and its possible use should be proposed as a hypothesis and then tested and verified by looking at examples and gathering evidence.
- iv.) Several risk management strategies would have to take into account different stakeholders. For routine-based management, for instance, the main stakeholders are industry and regulators, whereas with regard to assessment-based management the scientific community as well as innovators and developers would have to be included.
- v.) IRGC’s approach should provide for an ex-post review or evaluation of the risk management decisions taken and the results produced by them. Adaptive management then requires updating or revising the adopted strategy mix as well as underlying policies.

7. Risk Governance

7.1. An Overall Framework for Risk Governance – Applied in the Contexts of Biotechnology and Nanotechnology

The presentation of the workshop paper “An Overall Framework for Risk Governance” (workshop paper No.4) drew heavily on examples from biotechnology and genetically modified crops and also made some cross-references to the field of nanotechnology. The resulting discussion was therefore primarily concerned with governance aspects related to these fields.¹

¹ Figure 1 on page 5 of the workshop paper establishes the main strands of interaction between different stakeholders. It should be noted that regulators are thought to be part of the box labelled “policy makers and government”.

The following paragraphs summarise the main points of the discussion:

- Ø The evolving nanotechnology **debate seems to be primarily driven by** science and research institutions, rather than multi-nationals and other corporations – as of yet strong commercial interests have not been publicised (which, however, does not exclude that such interests exist). As far as the role of consumers in the debate is concerned, it seems that in some cases they simply cannot choose. Examples include nuclear, pesticides as well as biotech, whereby the latter two mainly present a choice for farmers. While the lack of choice might actually reinforce latent opposition, it might partly also prevent the formation of effective coalitions to protest – as was the case with pesticides. One might add in this respect that, in the past, corporate communication often failed to stop short of nearly obvious opportunism and contradictions: When the biotech business promised less pesticides due to biotech products this was of limited credibility given the fact that the same industries insisted that residues from pesticides are not a risk to the public.
- Ø The example of biotechnology also begs the question **how to effectively involve stakeholders** and, in particular, how to bring in the ‘silent majority’. Irrespective of the irrefutable probability that engaging people moves them “into the opposition box”, co-ownership of the agenda as well as certain ground rules as to who are the stakeholders should be helpful to initiating constructive dialogue. For the purpose of the framework it might be helpful to distinguish between different levels of engagement such as issue-based and case-based engagement.
- Ø Whether a certain policy will act as an **enabler** (à see presentation slide 11) or, vice versa, will have a **discriminating (inhibiting) quality** attached to it, cannot be causally determined in the run-up to a new regulation. Often it is mere accident which tips the scales in a particular direction. It is also a truism that an enabling policy to one group of stakeholders can be an inhibiting factor to others. The practices of the US patent office seem to be a point in case: Due to the introduction of user fees for patents, the amount of patents issued is greatly increasing while real innovation is in fact inhibited.
- Ø Crisis events can **change public attitudes** considerably (eg BSE, Three Mile Island nuclear accident). Additionally, along with public trust in the companies involved, such events will shatter companies’ reputation and goodwill. The same is true for ‘false positives’ (a notorious example of environmental fear-mongering combined with media hype and producing consumer panic are “Alar” pesticides).
- Ø The notion if governance has reached the **status of a general agenda** or movement and it coincides with a trend, according to which governments no longer regulate risks alone. Even traditional regulations have been based on interactions between governments, industry and NGOs. IRGC’s framework must avoid enacting certain assumptions such as “de-regulation is positive” as is often the case in policy-making.
- Ø IRGC’s framework should promote the devising of dynamic **communication strategies** and dialogue platforms and it has also to ensure that resulting communication policies are evidence-based.

7.2. Requirements for Implementation and a Performance Indicator for Risk Governance

The presentation of the workshop paper “Risk Governance – Key Elements for Achieving it” (workshop paper No.1) was followed by a discussion which included the following:

- Ø Rather than being a **model of governance** this concept defines the **‘ingredients’ needed in order to implement governance**. As it stands it is thought that this conceptualisation can gain practical relevance for risk practitioners as a checklist or auditing device which includes some sort of basic rating scale.

- ∅ As far as the practical significance of the **mathematical metaphor** and the implied rating system is concerned, views were divided – with poles of the spectrum being outright denial as opposed to prudent approval. If this metaphor or quantification is to be helpful, it is in need of some refinement. Currently, for instance, there are no criteria for the assignment of numbers (weightings). Also, depending on the system of regulation (eg regulation based on legally prescribed rules as opposed to product-related regulation), relationships between the individual elements might not be as depicted in the model. Other important points concerns the insertion of a feedback loop to allow for a continuous evaluation of the results of governance, the appropriate inclusion of individual stakeholders as well as the distinction between endogenous and exogenous factors on one hand and process factors and output factors on the other hand.
- ∅ IRGC must strike the **right balance between simplicity and complexity** in order to tackle a complicated problem. A conceptualisation which misses out on important elements is reductionist, and therefore lacks credibility, is as limited in gaining relevance as is a complex system which does not offer decision nodes or take into account the sparse time resources of a busy decision-maker.
- ∅ It is not the task of IRGC to prescribe or evaluate performance. It should develop a framework that all actors can use in **reviewing their own performance** and improve their practice.
- ∅ The components of the framework claim to be universally applicable (forming necessary but not sufficient components) but they need to be enriched by components which can account for a particular risk and situation. The **comprehensiveness** of the concept is therefore not deemed fully satisfactory since clearly important factors such as motivation, culture and perception don't seem to be given enough weight or appear to be excluded altogether from the conceptualisation.
- ∅ Another way of looking at governance uses a **functional approach** as propagated by literature on natural resource management. Such an approach is centred around the choices involved with major risks (à see article handed out at the workshop: “The Struggle to Govern the Commons” by T. Dietz, E. Ostrom, P. Stern). Risk governance therefore has to perform the following basic **functions**: providing necessary information, dealing with conflict, inducing compliance with rules, providing needed infrastructure, encouraging adaptation. A number of (empirically derived) **design principles** would then have to be built into the system so it can perform these functions. They include:
 - Devise rules that are congruent with contextual conditions
 - Define the boundaries of the risk as well as user groups
 - Devise an accountability system
 - Apply sanctions for violations
 - Devise low-cost mechanism for conflict resolution
 - Involve stakeholders in discussion of rules
 - Allow for governance at multiple levels (global, regional, national, local)
 - Employ mixture of institutional types (governments, self-organising systems etc)
- ∅ A comprehensive model of risk governance would have to include several **meta-criteria**:
 - Functions of a governance system
 - Design principles
 - Factors determining process quality (as proposed in the paper discussed)
 - Multiple-level governance (involving both vertical and horizontal structures)
 - Output evaluation criteria

- Ø As far as the **semantics and nomenclature** of the conceptualisation suggested by this paper are concerned, there is a clear need to be more explicit with regard to the following points: How do the individual ingredients relate to each other, eg “flexibility” and “directivity”? Is “organisational capital” not rather a “capability” than an “asset”? What is meant by “soft” elements? Does the concept include “responsibility” – and if yes, where? From a **linguistic perspective** it is crucial to define the exact semantic features of the term which can then serve to build a thesaurus. IRGC should therefore provide tools for diagnosing components (or ingredients) that affect good governance.

The session ended with the following **suggestions**:

- i.) It is important to have such an implementation-oriented framework for risk governance but it needs to be part of a larger framework which distinguishes between functions, design criteria, governance levels (vertical or horizontal), means to assure the quality of the governance process (process factors) and criteria directed at the quality of the outcome. Additionally, there is a need to explore the question as to whether it is possible to have one ‘universal’ model or whether different models need to be for different issues or clusters of issues.
- ii.) Proposed tools should be simple and pragmatic but must be backed up by sufficient sophistication and evidence – they should not aggregate too many different problems so the underlying issues become obscure and the potential use of numbers and quantification must not divert the attention from the process and structures on which they are based.
- iii.) With regard to the paper presented, the project subgroup should review the suggested components and look into the suggestions for additional criteria (such as motivation) that were suggested.
- iv.) Prior to its potential dissemination the proposal should undergo testing and be enriched with inductive studies and empirical validation. This is also a prerequisite for the proposal gaining credibility among major actors.
- v.) Applying the framework should focus on governance structures that demand co-operation between public and private actors. There is also a clear need to provide guidance as to how different actors can successfully interact.
- vi.) Finally, there is a clear need for the framework to be accompanied with appropriate (ie targeted and tailor-made) communication strategies responding to the different audiences. This in turn is thought to help increase the effectiveness and visibility of IRGC and its framework proposal.

7.3. NGOs and Governance

The discussion of workshop paper No.1 also led to a short exchange of thoughts on NGOs and their role within an overall governance framework. While governance clearly incorporates non-governmental entities it is of course not restricted to NGOs but, besides advocacy groups, also includes industry, philanthropic groups, civil society etc. In particular, NGO participation should not be seen as substituting civil society participation and there is certainly a long way to go to effectively involve civil society, especially when the problems to be dealt with are of a national or even global nature. Ideas in this area include collaboration with elected representatives as well as funding schemes in order to enable people to take part in the discussion.

In view of well organised vested interests, NGOs will often claim legitimacy in representing an otherwise silent majority. As a matter of fact, many international organisations integrate NGOs in their work programmes and policy-making efforts – NGOs have become accepted as a sort of natural stakeholder. Nonetheless, recent examples show that some NGOs don't

refrain from distorting scientific evidence in order to advance their purpose, partly legitimising such behaviour with a David vs Goliath situation.

Within a governance system it is crucial that the relevant information is both provided and heard, regardless of whom the information comes from. Apart from their obvious role within the hazard identification phase and as representatives of specific interests or values, NGOs can also play an important part in providing new arguments, devising solutions and championing widespread buy-in which is needed to effectively implement and sell solutions. These roles can change across contexts and risk fields and instead of adopting the cliché whereby NGOs are good at raising a problem but destructive during the problem-solving process the notion of a “shifting mosaic” of goals, interests, roles and coalition offers perhaps a better representation of the reality.

8. On a Multilingual Risk Glossary in Hypertext (Concertation Project)

As an other add-on to the workshop’s original programme, a freshly started multi-contributor European project focusing on risk terminology was presented to the workshop.

This project (WIN-MULTH) which, inter alia, is conducted by Gertrud Gréciano and Gerhard Budin, is going to develop a multilingual hypertext glossary of risk with integrated computer-aided learning facilities. The translation database forming the basis of the glossary will be underpinned with a comparative analysis of terminology and underlying models and, while being context-based and specific with regard to the different fields of risk, links different terms, texts and translations (à cf. presentation by Gerhard Budin, Gertrud Gréciano, Heidrun Gerzymisch-Argobast, Anneli Rothkegel). The timeline for delivering this project is 24 months. English, French and German are the initial languages to be covered by the glossary.

IRGC’s joining forces with the members of this project could result in important synergy effects.

9. On the Opportunities Related with Risk – Seen from a Management Sciences and Economics Perspective

The final deviation from the workshop programme involved a short presentation looking at the “positive” side, or opportunities, of risk and, consequently, an integrative approach to managing risk as proposed by a business school.

Acting on the assumption that management means *taking* the right risk, the integrated risk management approach of the University St. Gallen sees risk as a possibility of positive or negative deviation(s) from expected (business) results due to disruptive processes (à cf. presentation by Matthias Haller). This approach draws on four major characteristics of risk: Firstly, risks can only be circumscribed for clearly defined systems (in the corporate world eg the company as a whole or parts of it, one or more customers or suppliers etc). Secondly, risks occur only in systems in which objectives and expectations are supposed to be realised. Thirdly, risks manifest themselves in all three (ie social, technical, financial) dimensions of processes prevalent within the system. Fourthly, risks result from the dynamic of system evolution (ie the overall process that is orientated towards fulfilment of expectations).

Seen from such a perspective, risk management then means the creation, steering and control of objective-oriented systems with a view to realising opportunities and coping with disturbances.

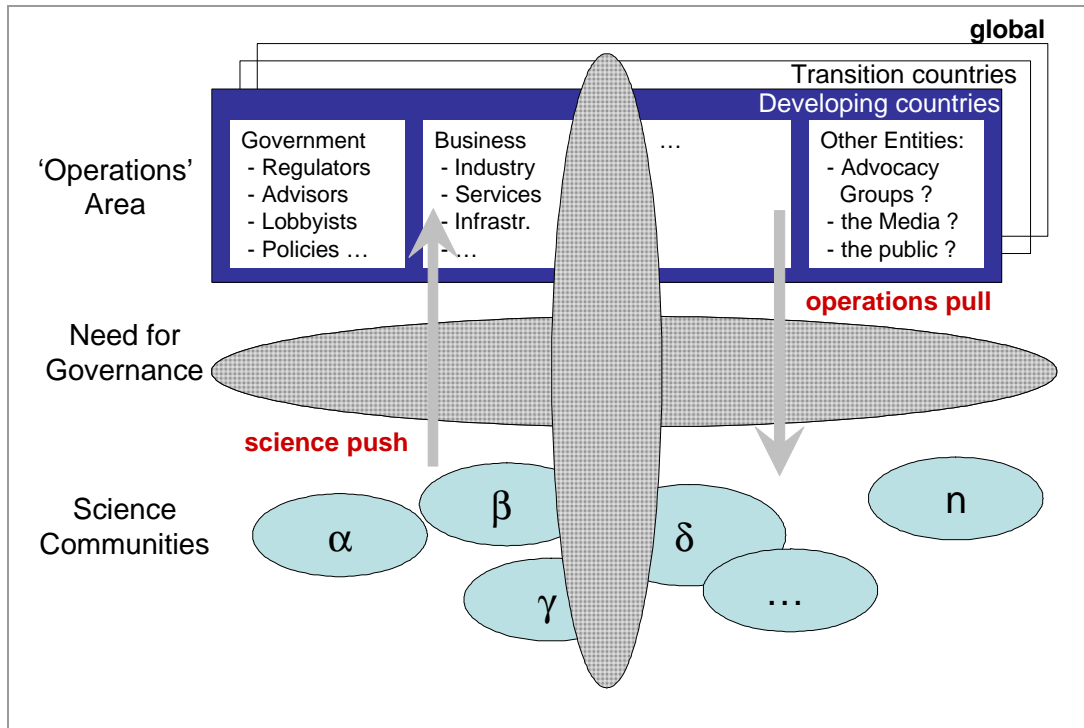
10. An Integrated Approach to Participative Risk Governance

The concluding session provided IRGC with **suggestions** as to what remains to be done:

- i.) The basis of a broad conceptual framework seems to be there and its elements now need to be brought together, put into relation to each other and integrated. There is a clear need for the framework to enable:
 - an analysis of both the downsides (negative consequences) and upsides (opportunities and benefits) of risk,
 - a thorough distinction between the different levels of risk governance (international, regional, national, local etc),
 - adequate consideration of risk perception (emotions and affects),
 - (qualitative) uncertainty-mapping as an alternative to probabilistic risk analysis (PRA),
 - an investigation of the financial risks associated with physical risks and, generally, a greater stress on economic approaches to risk,
 - more function-oriented analysis (looking into elements of functions and analogies),
 - state-of-the-art information management (making sure you have the right information before starting to process it),
 - the set-up of effective risk communication strategies
 - consideration of dynamic events as well as strategic vision
- ii.) Models, tools and aids building the framework should be made more explicit and explore the role of different actors and stakeholder participation. They should do justice to the complexity of the underlying issues and refrain both from over-simplification and too detailed and complicated a depiction of reality.
- iii.) For developing the above, appropriate existing approaches should be taken into account which should not only include what the Western hemisphere has brought forth in terms of conceptualisations but, also, concepts originating from Asia, Russia, Eastern Europe, South America and Africa.
- iv.) For both the general framework as well as the underlying models, tools and aids, extensive road testing is necessary in order to validate and check their robustness and explanatory power. In this respect it is essential to also invite comments from pressure groups and NGOs and, more generally, to select individuals and institutions for testing who are likely to disagree.
- v.) As a second step, a comparative study on actual approaches of risk governance in different risk fields/regimes and countries should be envisaged in order to further substantiate a general framework. Additionally, the extensive body of research on policy tools and regulatory tools should not be neglected: Instruments such as pre-market screening, design standards, best available control technology (BACT), performance standards, economic incentives tools (taxes, subsidies, certificates and allowances trading), labelling, civil liability and tort liability as well as their interplay should be included within an overall risk governance framework.
- vi.) The single major question is: can we develop one common, generic framework which can be applied to different contexts? Whereas this certainly should be IRGC's goal, it may be more realistic to expect an analytical framework that can be used universally, without, however, being prescriptive by distinguishing between necessary elements (which can be universalised) and sufficient elements (which are context-specific and are not conducive to generalisation). Another challenge consists in making room for revisiting policy choices.

It is furthermore important that IRGC's mission statement makes it clear where within the relationship between science and politics it sees its role and what this role should be. Equally important is how IRGC positions itself with regard to ensuring the inclusiveness of risk governance and its framework.

The illustration included below summarises what IRGC's role could be – that of a facilitator between different layers, sectors, communities:



Annex 1: Participants List

1	Dr Tony Bandle Head of Risk Policy Unit Tony.Bandle@hse.gsi.gov.uk	Health and Safety Executive (HSE) Rose Court 2 Southwark Bridge London SE1 9HS UK
2	Ms Heike Baumüller Programme Manager, Environment and Natural Resources hbaumuller@ictsd.ch	International Centre for Trade and Sustainable Development (ICTSD) International Environmental House 2 7 Chemin de Balexert 1219 Châtelaine, Geneva Switzerland
3	Prof Gerhard Budin Professeur (Terminologie et Normalisa- tion), Président de l'Association Euro- péenne de Terminologie gerhard.budin@univie.ac.at	Center for Translation Studies University of Vienna Gymnasiumstrasse 50 1190 Vienna Austria
4	Dr Robin Cantor Director, Financial & Insurance Services Practice RCantor@NavigantConsulting.com	Navigant Consulting 1801 K Street NW Suite 500 Washington DC 20006 USA
5	Dr Lutz Cleemann Managing Director <i>Member, IRGC Project Group</i> lutz.cleemann@allianz-azt.de	AZT Allianz Zentrum für Technik GmbH Krausstr. 22 85737 Ismaning Germany
6	Prof Jean-Pierre Contzen Chair Professor, Technical University of Lisbon; Chairman, Institute of Advanced Studies, United Nations University, Tokyo <i>Member, IRGC Project Group</i> jeanpierre.contzen@skynet.be	Avenue Prince Baudouin 11 1150 Bruxelles Belgium
7	Dr Kaspar Eigenmann Head Corporate Health, Safety and Environment kaspar.eigenmann@group.novartis.com	Novartis International AG WRO-1002.10.58 Postfach 4002 Basel Switzerland
8	Dr Peter Graham Independent Consultant <i>Member, IRGC Project Group</i> peter.graham1@ntlworld.com	9 Woodstock Rd North St Albans Hertfordshire AL1 4 QB UK
9	Prof Gertrud Gréciano Professeur (Linguistique Théorique et Appliqué, Lexicographie) gertrud.greciano@wanadoo.fr	Université Marc Bloch (UMB) Strasbourg 22, rue R. Descartes 67084 Strasbourg France

10	<p>Prof Matthias Haller Professor Emeritus of Risk Management and Insurance Economics, University of St. Gallen; President, Risk Dialogue Foundation <i>Workshop Moderator</i></p> <p>matthias.haller@unisg.ch</p>	<p>Stiftung Risiko-Dialog Kirchlistrasse 1 9010 St. Gallen Switzerland</p>
11	<p>Mr Matthias Heer Scientific Collaborator <i>Assistant Prof Haller</i></p> <p>matthias.heer@unisg.ch</p>	<p>Institut für Versicherungswirtschaft Universität St. Gallen (I-VW-HSG) Kirchlistrasse 2 9010 St. Gallen Switzerland</p>
12	<p>Prof Rolf Hertel Director</p> <p>r.hertel@bfr.bund.de</p>	<p>Federal Institute for Risk Assessment Poststelle Thielallee 88-92 14195 Berlin Germany</p>
13	<p>Dr Christian Kirchsteiger Head Probabilistic Risk & Availability Assessment of Energy Systems</p> <p>christian.kirchsteiger@jrc.nl</p>	<p>Joint Research Centre of the European Commission Institute for Energy Westerduinweg 3 1755 LE Petten The Netherlands</p>
14	<p>Prof Dr Wolfgang Kröger Professor of Safety Technology <i>IRGC Founding Rector</i></p> <p>kroeger@mavt.ethz.ch</p>	<p>ETH Zürich Laboratorium für Sicherheitsanalytik Institut für Energietechnik, WEC F Weinbergstrasse 11 8092 Zürich Switzerland</p>
15	<p>Mrs Caroline Kuenzi <i>IRGC Project Manager</i></p> <p>caroline.kuenzi@irgc.org</p>	<p>International Risk Governance Council Chemin de Balaxert 7-9 Châtelaine 1219 Geneva Switzerland</p>
16	<p>Dr Jean-Pierre Nordvik Project Leader Risk Comparability and Integrated Risk Assessment (COMPASS)</p> <p>jean-pierre.nordvik@jrc.it</p>	<p>Joint Research Centre of the European Commission Institute for the Protection and Security of the Citizen TP 361 Via Enrico Fermi 1 21020 Ispra (VA) Italy</p>
17	<p>Prof André Poucet Unit Head Traceability and Vulnerability Assessment (TRVA)</p> <p>andre.poucet@cec.eu.int</p>	<p>Joint Research Centre of the European Commission Institute for the Protection and Security of the Citizen TP 361 Via Enrico Fermi 1 21020 Ispra (VA) Italy</p>
18	<p>Prof Ortwin Renn Professor of Environmental Sociology; Director, Research Institute 'Dialogik' <i>Chairman, IRGC Project Group</i></p> <p>ortwin.renn@soz.uni-stuttgart.de</p>	<p>Universität Stuttgart Institut für Sozialwissenschaften Abteilung für Technik- und Umweltsoziologie Seidenstr. 36 70174 Stuttgart Germany</p>

19	Mr Andreas Schraft Head Risk Engineering and P&C Academy Andreas_Schraft@swissre.com	Swiss Reinsurance Company Mythenquai 50/60 8022 Zurich Switzerland
20	Dr Rolf Skjong Chief Scientist Risk and Reliability Rolf.Skjong@dnv.com	Det Norske Veritas Strategic Research 1322 Høvik Norway
21	Dr Paul Stern Director PStern@nas.edu	Committee on the Human Dimensions of Global Change The National Academies 500 Fifth Street, N.W. Washington DC 20001 USA
22	Prof Joyce Tait Director <i>Member, IRGC Project Group</i> joyce.tait@ed.ac.uk	The University of Edinburgh ESRC Centre for Social and Economic Research on Innovation in Genomics (INNOGEN) Old Surgeons' Hall High School Yards Edinburgh EH1 1LZ UK
23	Prof Hirokazu Tatano Professor (Integrated Management for Disaster Risk) tatano@imdr.dpri.kyoto-u.ac.jp	Kyoto University Disaster Prevention Research Institute (DPRI) Gokasho Uji Kyoto 611-0011 Japan
24	Dr Peter Wiedemann Programme Director p.wiedemann@fz-juelich.de	Forschungszentrum Jülich GmbH Programme Group Humans, Environment, Technology Wilhelm-Johnen-Straße 52425 Jülich Germany
25	Prof Jonathan Wiener Professor of Law, Environmental Policy and Public Policy Studies; Faculty Director, Center for Environmental Solutions <i>Member, IRGC Project Group</i> wiener@law.duke.edu	Duke University Box 90360 27708-0360 Durham NC USA

Annex 2: Workshop Programme

Saturday, 13 November 2004	
09.00	Welcome and Short Introduction of Workshop Participants Lutz Cleemann, Matthias Haller, All Participants
09.30	Opening Session: 'The Need for a New Approach to Risk Governance' <i>Why is the IRGC undertaking this project, why is the workshop an essential part of the project's activities, and what are examples of effective and ineffective risk governance?</i> Introductory Remarks by Wolfgang Kroegeer and Ortwin Renn
10.00	Coffee Break
10.30	Main Session 1: 'Key Elements for Achieving Good Risk Governance' <i>How is 'good governance' to be defined, what are the components of best practice risk governance and what are the processes, skills, competences and resources required to achieve good governance?</i>
13.00	Lunch
14.00	Main Session 2: 'Reviewing Approaches to the Characterisation of Risk' <i>What are the commonalities and differences between several well-known existing methodologies as well as related strengths and weaknesses? What should a classification and terminology for risk look like in order to support IRGC's own work and have practical benefit to risk practitioners worldwide?</i>
15.30	Coffee Break
16.00	Main Session 3: 'A Generalised Framework for Risk Management Regimes' <i>What are the essential dimensions and components of an effective regime for risk management, eg in terms of processes & strategies, institutional arrangements and stakeholder involvement? How to distinguish between different risk management strategies? Considering the range of possible components what should a generalised framework look like?</i>
19.30	Dinner
Sunday, 14 November 2004	
09.30	Main Session 4: 'Challenges of Governing Risk – A Glimpse at Different Risk Fields' <i>How might an overall framework for risk governance look like and how might this be applied in specific contexts? Considering the individual approaches to risk management actually used with regard to GM crops, nanotechnology and the electricity grid – what are, vice versa, the implications for a generic framework in order to better assure the establishment and effective operation of risk governance strategies?</i>
12:30	Lunch
13:30	Concluding Session: 'An Integrated Approach to Participative Risk Governance' <i>Drawing on the discussions and output from earlier sessions, what are the necessary components to build an integrated approach to participative risk governance and how are they to be structured?</i>
15.30	Wrap-up Ortwin Renn, Matthias Haller, All Participants
15.45	End of Workshop