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### Uncertainty, precaution and risk governance

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## EDITORIAL

### Uncertainty, precaution and risk governance

#### Risky risks

Do new and uncertain risks threaten human health? Because science is unable to sufficiently answer this question, risk and safety policies confront limits, exemplified by climate change and adaptation strategies, new infectious diseases, new technologies, convergence of technologies and the increasing transboundary interconnectedness of industrial activities in a globalizing world. The possibilities of estimating risks (*risk assessment*) and to reduce or control them through policy measures (*risk management*) are under pressure, because of uncertainties with which scientists and policy-makers are faced. Do we still know which risks are given? Can we actually interpret potential threats in terms of probabilities and effects, doses and responses? When is it counterproductive to rely on quantitative risk assessments? How to design risk policies in domains where experts fundamentally disagree? Do we need other concepts and policy strategies to be able to manage current and future risks? Such issues cannot be resolved from the angle of a single domain or a single interest. But is transdisciplinary and multi-level collaboration involving various governments, businesses, experts and public parties the way forward?

#### The Dutch approach

In the past years, on request of the Dutch government, several Dutch knowledge institutes have published studies about more up-to-date forms of dealing with risk in public policy-making. The Netherlands Environmental Assessment Agency (PBL; formerly known as MNP and being part of the RIVM earlier), the Advisory Council on Spatial Planning and the Environment (RMNO), the Dutch Health Council and the Scientific Council for Government Policy (WRR) all published studies and advisory reports focusing on the governance of modern risks: they tried to translate state-of-the-art thinking in risk research to recommendations for public policy. These studies focus on dealing with existing as well as new and uncertain risks, including today's debate on 'precaution'. The various studies address the ideas on different types of risk problems and uncertainties, enabling also diversification of management principles and risk management strategies. These advisory bodies have quite different mandates, constituencies and networks, which make it all the more interesting that, notwithstanding differences in nuances and emphasis, the overall message is so similar.

In 2003, the Netherlands Environmental Assessment Agency (PBL) published the study 'Dealing sensibly with risks'. This study provides an overview of risk constructs and backgrounds of risk perception and risk acceptance. Starting from the limitations and shortcomings of the classic so-called positivistic risk approach, this study offers proposals on how to apply decision rules, cost effectiveness or cost-benefit

information, and strategies for risk management to different kinds of risk problems, be it simple or more complex risks, existing or new ones, uncertain and ambiguous risks – including those to which a precautionary principle might apply. The assessment of risk is complex, contingent in time and dependent on societal and political context. PBL therefore argues that no blueprint exists for politically and administratively dealing with new and uncertain risks. When the relationship(s) between cause(s) and potentially serious yet still unknown impact(s) is unclear, and when also the effects of drastic and expensive control measures are uncertain, sensibly dealing with risk, uncertainty, and precaution involves a tailor-made, dynamic and adaptive strategy. The PBL also published a number of reports and developed tools pertaining to the issue of dealing with uncertainty more generally. In its ‘Dealing sensibly with risk’ report, PBL advises to practise a participatory risk management approach: consulting and involving various stakeholders and societal groups in disseminating risk information, framing risk problems, setting assessment models, articulating uncertainties, appraising assessment outcomes, developing and implementing management instruments, communication and building community support for transparently dealing with risks. Adopting this study, the Dutch Ministry of Environment issued a guidance paper in 2004 offering a pragmatic approach concerning risks: (1) transparent political decision processes, (2) explicit formulation of responsibilities and liabilities of government, private sector and citizens, (3) weighing and appraising of the size of physical and/or perceived risks (to the extent possible) and the social costs/benefits against each other, and (4) involving citizens in decision-making at an earlier stage (level and format depend on type of concern).

In 2003 and 2004, the Advisory Council for Research on Spatial Planning, Nature and the Environment (RMNO)<sup>1</sup> published two background reports pertaining to uncertainty, risk and precaution, namely ‘Not afraid of uncertainty’ and ‘Spotting new risks?’ (both studies are only available in Dutch). In those reports, the significant importance of uncertainty and new risks and the associated challenges for public policy-making are explored. Various sources of uncertainty and types of risks are discussed. For example, a distinction is made between ‘unfamiliar new risks’ and ‘renewed risks’, the latter being familiar risks or forms of damage, which could change or manifest themselves differently due to changed circumstances. It is emphasized that decisions with regard to new and uncertain risks are tragic choices: every decision can result in unforeseen and/or undesired consequences, but at the same time the fear that accepting this state of affairs by definition results in paralysis in decision-making is seriously questioned. The role of experts as early listeners (instead of early warners), the need for reflexivity and the use of methods as means to reflection are addressed and it is argued that society should stimulate the (latent) uncertainty awareness of experts. Some suggestions for how to assess new risks are proposed, such as using knowledge lacunae and speculations, a broad system definition and a broad perspective on potential harm as a point of departure and the potential of using analogies and anecdotal evidence in assessing uncertainties and risks. Finally, the RMNO argues for more uncertainty education and training. In 2007, the RMNO formulated a knowledge agenda on ‘Governance of risks’. The RMNO observes that traditionally the government was the central player in dealing with risks, but that this situation is changing rapidly. It is increasingly the case that taking, preventing or transferring of risks is also a responsibility of citizens, businesses and other social actors, and this has changed the playing field, turning it more into a distributional issue. Accordingly, the RMNO calls for applying modern

risk governance approaches and dynamic coordination between various social parties, including the government.

In its 2008 report 'Uncertain safety: Allocating responsibilities for safety' (English version, 2009), the Scientific Council for Government Policy (WRR) concludes that the current approach to risks and the distribution of responsibilities is not future-proof. Like in the PBL and RMNO reports, it is argued that both governments, businesses, non-governmental organizations (NGOs), experts and individual citizens are involved in dealing with risks. This results in international networks and complex arrangements and it is, furthermore, argued that reallocation of responsibilities in complex networks is not a zero-sum game. The government still plays a major role in risk issues, while at the same time its room for action is limited. Like in the previous reports, the adequacy of the classical risk approach is questioned. It is argued that the classical approach is a special case, bound to risk issues that involve little or no uncertainty, rather than the overall standard of practice. In this context, the WRR argues that the vulnerability of people, society and the environment demands a proactive approach to uncertainties. To serve as a basic normative premise for future risk and safety policies, the WRR reformulates the precautionary principle into a principle that calls for more proactive activities and an extension of current responsibilities: no longer can responsibility be limited to foreseeable harmful effects of action. The perspective should be reversed from damage to vulnerability. This approach, the WRR argues, has to be implemented in public law and private law provisions and even in the constitution, as well as in institutional arrangements. The WRR also points to the new role of experts.

Almost simultaneously, the Health Council of the Netherlands published its report 'Prudent precaution' (2008), in which the value was discussed of applying the precautionary principle when uncertainty seriously hampers decision-making. The Council takes the view that greater weight should not always be attached to (potential) negative consequences of risks, but should also be balanced against the (potential) positive consequences of the particular activity. The Health Council does not regard the precautionary principle as a decision rule, but as a strategy for dealing with uncertainty in an alert, careful, reasonable and transparent fashion, which always takes account of the particular situation. This proposal is quite similar to the WRR's proposal. In the Health Council's view, applying the precautionary principle is by no means identical to banning activities, although this may be the preferable option in some cases. The Health Council further suggests that the outcome of implementation should be monitored as a basis for policy review and realignment in the light of new information, so that assessment and decision-making guided by the precautionary principle are dynamic and iterative processes. According to the Council, the precautionary principle should be applied in all health-related policy domains (preventive and curative health care, environmental management, occupational health and safety and food), making it common practice, and creating thus a culture in which it is the norm that uncertainty is carefully addressed.

### **Scheveningen Risk Approach Conference**

In view of the above (partly serendipitous) agreement, the WRR, the RMNO and the PBL, in consultation with the Dutch Health Council, decide to join their forces in organizing a conference focusing on the limits of current risk and safety policies and the challenges for future policy-making, including the issues of uncertainty and precaution. The conference took place on May 13, 2009 in Scheveningen, the

Netherlands. The goals of the conference were twofold: (1) to present an analysis of the current limits of the risk approach to policy-makers, experts and other interested parties and (2) to discuss alternative policy, institutional and administrative arrangements, such as assessment frameworks, decision principles, and regulation and legislative grounding. The conference was entitled: 'The risk approach and its limits: how to proceed?'. Ragnar Löfstedt, professor in Risk Management and director of the King's Centre for Risk Management (London), gave a key note lecture; Ortwin Renn, professor of Environmental Sociology and Technology Assessment at Stuttgart University, was interviewed on stage; and Jaap Spier, Advocate-General in the Supreme Court of the Netherlands and honorary professor in Liability and Insurance in Comparative Perspective at Maastricht University, presented a lawyer's viewpoint on the content of the conference and the WRR report in particular. In the aftermath of the well-visited conference, it was decided that it would be worthwhile to develop the various contributions into scientific papers for a special issue of the *Journal of Risk Research* as it provides an overview of the current state-of-the-art pertaining to the governance of risk, while at the same time it indicates which future challenges have to be faced by the risk community.

### **Introduction to the papers**

Löfstedt et al. discuss teething problems and unforeseen consequences associated with the ideals of transparency and public participation in the governance of risk. Are regulators prepared for greater transparency? Are regulators able to respond to queries, concerns and attacks? Does public deliberation increase trust? How to counteract self-selection biases? What is the role of experts? And how to organize proactive risk communication? Löfstedt et al. raise serious issues with regard to the power of campaigning academics, NGOs and other stakeholders with a particular interest and the fundamentally changed role of the media. They discuss three case studies in which the (uncertain) risks have been significantly amplified with consequences in terms of patient safety, unnecessary market restrictions and economic losses, and replacement by more risky alternatives. They do not argue against the new risk approach, but they conclude that in a post-trust era it is required that policy-makers and regulators become more competent communicators and that ways need to be found to help the media to become more aware of their role and more attuned to communication pitfalls. They conclude that public deliberation should not be treated as a panacea, but should be better targeted and better used by policy-makers and regulators. Löfstedt et al., furthermore, propose to consider a model of scientific peer review for risk assessments used in policy-making and risk regulation.

The paper by van Asselt and Renn aims to summarize and review the state-of-the-art thinking in the field of risk research on risk governance. They argue that central to the notion of risk governance is the argument that not all risks are simple. Systemic risks are uncertain, complex and/or ambiguous. However, van Asselt and Renn conclude that it is a consistent finding in a broad body of the literature that these risks are treated, assessed and managed as if they were simple. In the political sciences, the term 'governance', which implies that collective binding decisions are taken in a complex, interacting network, is used in a descriptive sense. Van Asselt and Renn argue that in the context of risk, governance is not just descriptive, but also embodies a normative ideal. It is argued that in regulatory practice governance of risk is not adequately accommodated. So risk governance refers to a body of ideas of how to deal

with uncertain, complex and/or ambiguous risks more adequately and responsibly. Van Asselt and Renn synthesize these proposals into three principles: the communication and inclusion principle, the integration principle and the reflection principle. These principles should not be considered as separate steps, stages or activities, but as principles that should be considered consistently over the course of any attempt to govern risks that involve uncertainty, complexity and/or ambiguity.

The paper by van Dijk et al. aims to explore what risk governance would entail in actual practice. What does a procedural approach to precaution actually involve? The paper first discusses in more detail the approach that the Dutch Health Council outlined in its 2008 report. Van Dijk et al. then discuss the dossier of the potential health effects of electromagnetic fields (EMF). By means of this practical case, they aim to explore the role scientific advisory bodies can play in risk governance. They argue that the EMF issue is marked by considerable uncertainty with regard to health risks, because at least some relevant stakeholders and scientists hold that view. Van Dijk et al. review and compare how the Dutch Health Council and its Belgian counterpart, the Superior Health Council, dealt with and could deal with uncertain EMF risks in their advisory activities. They argue that experts should be open to questioning by non-experts and candid about uncertainties. This requires that scientific advisory bodies are more modest about what science can offer and that they are open about scientific pluralism. In the view of van Dijk et al., scientific advisory bodies ideally map the decision situation, namely present the available evidence with a focus on the identification and interpretation of uncertainty. They should include and preferably focus on uncertainties that trigger or could trigger concerns in society. Van Dijk et al. propose that scientific advisory bodies explore potential consequences of various interpretations of the limited body of evidence. In view of uncertainty, scientific advisory bodies cannot offer unequivocal advice on the best policy option, but they can outline various possible courses of action. More particular to EMF, scientific advisory bodies may, for example, unmask commercially marketed 'exposure reduction measures' and indicate types of research most promising in view of reduction of better understanding of key uncertainties. The question 'venturous or cautious' is inherently political and should be discussed in the political arena, but there is still a need for scientific advisory bodies that as honest brokers expand the scope of choice in a way that at the same time enables decision-makers to choose.

Rogers focuses on the precautionary principle, its application on the European Union (EU) level and in EU case law in particular. He discusses how the precautionary principle got legal meaning in the EU in the course of the last three decades. Rogers argues that in the EU context the basic idea is that the precautionary principle grants permission to act under scientific uncertainty, hereby acknowledging that the uncertainty is usually multi-dimensional. He compares the Court's decisions involving the precautionary principle against the criteria set out in the *Communication on the Precautionary Principle* of the European Commission. This paper provides a clear description of the legal context and practice around the precautionary principle. Rogers shows that in EU practice application of the precautionary principle requires scientific evaluation of the risks in which uncertainty is identified and that the precautionary principle should affect all aspects of risk analysis. This interpretation is consistent with the lines of reasoning in the WRR and the Health Council reports. Rogers emphasizes the paradox that notwithstanding uncertainty, the court always has to rule, i.e. to produce certainty. The EU courts could make provisional or interim orders, but according to Rogers, thus far they have not used



this possibility. Rogers, furthermore, questions the usual resort to the court in the case of uncertain risks. In his view, many of the legal cases discussed would have been unnecessary if the parties involved had discussed the issues face to face and pooled their knowledge on the uncertain risks rather than seeking judgement from the court. From his paper, it can be concluded that it would be advised to find ways to deal with uncertain risks that prevent resort to the court, while at the same time, Rogers' paper provides some reflections the courts could use to do a better job in the cases that still are brought to it.

De Vries et al. challenge the taxonomy-based approach to risk management that has been proposed as guidance for the governance of risk. The taxonomy-based approach charts how each category of risk, characterized in terms of the degree of incertitude, calls for a specific set of assessment and management strategies. De Vries et al. argue that the taxonomy-based approach fails to adequately address the challenge uncertainty presents and it provides an unreliable guide as risk problems may migrate between different categories. Taxonomies fail to take into account that risk classification is contingent in time and space and may differ from one group or individual to another. De Vries et al., furthermore, provide well-thought input to the long-lasting debate on how to conceptualize uncertainty and risk. They argue that the crucial point is that in order to turn uncertainties into risks, considerable efforts have to be made. In spite of all efforts, however, uncertainty may persist. So de Vries et al. conclude that uncertainty deserves pride of place over risk, as risk is a particular outcome. Accordingly, the purpose of risk governance can be defined as organizing the efforts needed to increase the reliability of risk assessment and to introduce measures aimed at prevention or enhancing resilience. In the final part of their paper, de Vries et al. flesh out a number of institutional and legislative issues regarding the role of politics, science, civil society and business, which can be read as a summary of the WRR report: it takes the precautionary principle as a normative principle next to individual responsibility and solidarity. Responsibilities should be allocated on the basis of the consideration that the (social and natural) environment, in which risks manifest themselves, is vulnerable and actors are obliged to act responsibly in such a context. De Vries et al. suggest that obligation responsibility should be a guiding concept in institutionalizing risk governance.

In the final contribution, Spier reflects on the risk governance ideas put forward in the previous papers from a legal perspective. His viewpoint can be described as an attempt to find clues in legal principles and case law, which would enable dealing with uncertainty, risk and precaution in ways consistent with the basic tenet of risk governance. To that end, he reviews legal principles as well as court cases at the European courts and the supreme courts of, among others, the USA, Canada, India and the Netherlands and rulings of international tribunals. In Spier's view there is a fluid line between a known and a potential risk and even if it would be possible to distinguish them unambiguously in legal terms, the question is whether that should make a legally decisive difference. It would be very unsatisfactory if potential damage to many people or the environment could not give rise to any claim. Spier argues that to that end, human rights may serve as a legal basis as well. He identifies cases in which states were held to act proactively. Spier, furthermore, sees possibilities for potential victims or related associations to explore the feasibility for asking for injunctive relief from the courts and he suggests considering a cap on liability coupled to appropriate personal liability. He concludes that law reform is needed to face the challenges uncertainty presents.

## Epilogue

The papers in this special issue increase our understanding of dealing with modern risks in a changing world. The development of frameworks and tools and the design of processes, guidelines and institutions that enable society to adequately deal with modern risks, is an ongoing challenge to the risk community. The papers in this volume, implicitly or explicitly, question taxonomy-based approaches to risk governance, as it is difficult to unambiguously attribute risk issues to categories, risk classification is anyway contingent and the question is whether categorization allows for decisive differences, for example in legal terms. This step 'backwards', as it diverts from the prominent approach in the last years, requires rethinking the basis from which frameworks, tools, processes, guidelines and institutions have to be developed. What principles need to be considered in risk governance?

Van Asselt and Renn summarize the current body of ideas on risk governance in three principles: the communication and inclusion principle, the integration principle and the reflection principle. Implementation of the principles creates other challenges, for example fundamental issues pertaining to selection and transparency (Löfstedt et al.). So the challenge is to implement the principles in a reflexive way open to teething problems and unforeseen consequences. In various papers (Rogers, van Dijk et al. and de Vries et al.), it is, furthermore, suggested that the precautionary principle needs to be rethought and once rethought, it could also serve as a basic risk governance principle. The precautionary principle is increasingly approached as a legal principle. In this special issue, a procedural or even normative approach is endorsed. The precautionary principle should not be a principle just for the courts for various reasons. The precautionary principle should affect all stages and all aspects of dealing with risk, from risk framing, to risk assessment, communication, management and regulation. It should therefore not just appear in the instance of last resort. Secondly, resort to the court is in many cases problematic, as the courts are forced to serve as a super-expert, implying a competence problem, and it might be inefficient, ineffective and unfair, as critical reflections on case law in which the precautionary principle was invoked illustrate. If parties involved would discuss issues and pool their knowledge, the expensive resorts to the court are not just unnecessary, but simply redundant. As a legal principle, the precautionary principle has little to offer. From the perspective of risk governance, the precautionary principle should be read as the obligation to take uncertainty seriously in all stages and in all dimensions. Read in this way, the precautionary principle becomes a normative, instead of a legal principle.

Löfstedt et al. emphasize that regulators, policy-makers and the media have to develop competences in order to be able to deal with the outcomes of processes developed from these risk governance principles. So the risk community also needs to reflect on what it has to offer in terms of competence and capacity-building, next to the rethinking of principles and the development of sound frameworks, tools, process designs, guidelines and institutional proposals from those principles. Furthermore, this special issue highlights that the role of experts needs to change. Risk governance requires that experts are open to questioning, candid about uncertainties and open about scientific pluralism. Ideally, experts map the decision situation. They explore potential consequences of various interpretations of uncertainties, they outline various possible courses of action and they indicate types of research most promising for reducing or better understanding key uncertainties. From speaking truth to power to honest brokering. This also requires different competences and capacity-building, also within the risk community, as many risk researchers serve as experts.



And although attempts must be made to make resorts to the court superfluous, at the same time, risk governance requires paying serious attention to the legal context, frameworks and practices. Not just because some major risk conflicts will still be brought to court, but also because the law is co-shaping modern democracies as constitutional states. Within risk research, a tradition of interdisciplinary analyses of case law relevant from a risk perspective is growing, as some of the papers in this special issue testify. Risk governance requires sustaining this rather recent tradition of integrated social science and law research. The papers in this special issue suggest that there are legal options that are important from the perspective of risk governance, such as provisional or interim orders, asking for injunctive belief and building on human rights, which are not or underutilized and that there are suggestions for legal reform, such as obligation responsibility, and a cap on liability coupled to personal liability, that need serious reflection. To that end, engaging with legal scholars and professionals is needed. It might well be thinkable that also in this domain there is a need for competence and capacity-building in which the risk community also has a role to play.

On the one hand, this special issue is an attempt at taking stock. What is the current state of the art with regard to uncertainty, precaution and risk governance? On the other hand, the critical reviews of the state of the art indicate a number of challenges the risk community is faced with. It should agree on at least some principles that should be consistently considered in the development of frameworks, tools, process designs, guidelines and institutional proposals. This special issue is a contribution to that process. The principles proposed in this paper warrant further reflection and discussion as well as critical thinking on the teething issues that are or might be faced in implementation. Furthermore, this special issue identifies a clear need to consider competences regulators, policy-makers, media, experts and legal professionals need to be prepared for in risk governance practices. It is suggested that we, the risk community, should take a responsibility in capacity-building, both among ourselves and in other communities. In its early days, risk research was obviously engaged action research. Also today, risk scholars that are not in one way or the other engaged with actual risk dossiers or public policy-making on risk are rare. That is not a problem, but an asset. The multiple identities and networks can be used to propel sound risk governance in action. The current special issue is rooted in the interface between risk research and public policy practice. By feeding back to the risk community, it aims to empower changes in risk practice in multiple ways.

### **Note**

1. The RMNO has been abolished since January 2010, but the website <http://www.rmno.nl>, where publications can be downloaded, still exists.

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