

# CRN REPORT

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## Focal Report 1 RISK ANALYSIS

Zurich, November 2008

Crisis and Risk Network (CRN)  
Center for Security Studies (CSS), ETH Zurich

Commissioned by the Federal Office for Civil Protection (FOCP)

*Purpose:* As part of a larger mandate, the Swiss Federal Office for Civil Protection (FOCP) has tasked the Center for Security Studies (CSS) at ETH Zurich to compile “focal reports” (Fokusberichte) on critical infrastructure protection and on risk analysis to promote discussion and inform about new trends and insights.

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*Disclaimer:* The views expressed in this focal report do not necessarily represent the official position of the Swiss Federal Office for Civil Protection, the Swiss Federal Department of Defence, Civil Protection, and Sport or any other governmental body. They represent the views and interpretations of the authors, unless otherwise stated.

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## Table of Contents

Introduction .....	1
The Task.....	1
The Structure of the Focal Report .....	1
1) Issues and Trends in Risk and Vulnerability Analysis on the Policy Level in a Selection of Countries.....	2
1) Concepts .....	3
2) Threat Spectrum .....	5
3) Approaches and Products.....	6
4) Further Points of Interest.....	8
Risk Communication.....	8
Self-help.....	8
5) Possible Lessons for Switzerland.....	9
6) Annotated Bibliography .....	11
Government reports and other policy documents.....	11
Governmental internet resources (selection).....	16
University resources.....	18
Other internet resources.....	18
Part 2: Issues and Trends in the Academic Literature .....	21
1) Applied / Policy-Relevant Research .....	21
Annotated Bibliography - Applied Research .....	22
2) Security Studies Literature: Towards Reflexive Security.....	25
Annotated Bibliography - Security Studies Literature.....	26



## Introduction

### *The Task*

The analysis and evaluation of risks and threats relevant to the civil protection system is among the key responsibilities of the Swiss Federal Office for Civil Protection (FOCP). As part of a larger mandate, the FOCP has tasked the Center for Security Studies (CSS) at ETH Zurich with producing two annual 'focal reports' (Fokusberichte) on risk and vulnerability analysis.

According to this mandate, the focal reports are compiled using the following method: First, a 'scan' of the environment is performed with the aim of searching actively for information that helps to expand and deepen the knowledge and understanding of the issue under scrutiny. This is a continuous process that uses the following sources:

- Internet Monitoring: New and/or relevant publications and documents with a focus on risk and vulnerability analysis are identified and collected.
- Science Monitoring: Relevant journals are identified and screened, and relevant articles evaluated.
- Government Monitoring: Relevant policy documents from Canada, Denmark, Germany, the Netherlands, Norway, Sweden, the United Kingdom, and the United States and as well as other countries in the European vicinity that are relevant to Switzerland are identified.

Second, the material thus collected is filtered, analyzed, and summarized in the focal reports.

### *The Structure of the Focal Report*

The focal report at hand is structured as follows:

1. Based on the review of key governmental documents on risk and vulnerability analysis identified in the scan, this report focuses on commonalities and differences in the use of concepts, the threat spectrum covered, and the methodological and conceptual approaches taken. It further discusses two specifically noteworthy points: a recent focus on risk communication and a tendency towards establishing 'self-help' guides. After discussing possible lessons for Switzerland, it concludes with an extensive annotated bibliography.
2. In the second part, the report gives a brief overview over major developments in the field of risk analysis research. A first section looks at literature in the field of (applied/policy-relevant) literature, a second focuses particularly on risk analysis in security studies/IR. These two parts are followed by an annotated bibliography.

## 1) Issues and Trends in Risk and Vulnerability Analysis on the Policy Level in a Selection of Countries

### Background

It is widely acknowledged that long-standing security paradigms are no longer fully adequate for explaining current challenges. As traditional military threats take a backseat to 'new' security issues ranging from suicidal terrorism to climate change, conventional conceptions of security need to be rethought and re-fashioned. The concept of 'risk' seems to capture many aspects of the new environment better than the old concept of 'threat': risks are indirect, unintended, uncertain, and are by definition situated in the future, like many of the new challenges seem to be.

Risks analysis as a tool for policy planning has been used in government circles for a number of years, but some areas of government were slower to catch on than others. In security policy, for example, use of risk as a concept and risk analysis as a method only gained greater prevalence in the latter half of the 1990s, in parallel to the broadening of the security agenda to include a wide range of non-military issues. Today, however, the majority of states have adopted risks as a method, tool, and mode of thinking when it comes to national security matters, with considerable impact on how different actors try to capture and measure these challenges and also how they are ultimately handled.

For this focal report, the authors systematically sifted through recent policy documents related to strategic risk and vulnerability analysis from 14 countries<sup>1</sup> in order to identify key documents, all of which are listed in the annotated bibliography below (chapter 6). The most recent and/or relevant ones were then identified for in-depth analysis, as listed in the following table:

Country	Document
Canada	An Emergency Management Framework for Canada, 2007
Germany	Dritter Gefahrenbericht, 2006 / Problemstudie: Risiken für Deutschland, 2005
Netherlands	National Risk Assessment Method Guide, 2008
Sweden	Risk and Vulnerability Analyses, 2008
UK	National Risk Register, 2008
US	Risk Assessment efforts by the DHS, i.e. The Department of Homeland Security's Risk Assessment Methodology, 2007

Subsequently, these documents were compared, with a focus on the concepts they work with, the threat spectrum covered, (methodological) approaches taken, and additional products generated by the risk analysis efforts. The analysis of these points was guided by the following questions:

- 1) *Concepts*
  - Are the utilized concepts defined? If yes, how?
  - What are the reasons given for focusing on risks / for doing risk analysis?
- 2) *Threat Spectrum*
  - What threats/risks/scenarios do the reports focus on? For what reasons? How were they selected?
  - Are there specific focal points?
- 3) *Approaches and Products*
  - How is the risk analysis process organized?
  - What methods are used in performing the risk analysis / in developing the scenarios?
  - Who is in charge of performing the risk analysis? Who develops the scenarios?
  - What kind of products are generated? (scenario catalog, databases, etc.)

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<sup>1</sup> These countries are: Austria, Belgium, Canada, Denmark, France, Finland, Germany, Italy, Luxembourg, the Netherlands, Norway, Sweden, the UK, and the US. The authors deliberately refrained from focusing on international actors, private actors or private interest groups, etc. Publications such as the German "Grünbuch" were therefore not included in the in-depth analysis, even though the document is both highly interesting and relevant.

- Do the scenarios serve a 'higher' purpose, i.e., are they relevant for security policy planning, do they play a role in the national security strategy?

The first three chapters on 1) concepts, 2) the threat spectrum, and 3) approaches and products are followed by a fourth chapter that briefly discusses two points, i.e. risk communication and self-help, that seemed particularly noteworthy. Chapter 5 looks at lessons for Switzerland's own risk analysis project. Chapter 6 covers the annotated bibliography.

### **1) Concepts**

A key thread amongst the majority of risk management strategies reviewed was the shared characteristic of how states are trying to measure risk. Probabilistic risk assessment and statistical predictions continue to be a favored approach as states take advantage of available statistical (quantitative) data and only supplement incomplete data with expert opinions (qualitative), historic (analog) events, and case histories. For example, in cases of hazards (often understood as covering natural events, disasters, and accidents), the probability of a risk is determined quantitatively on the basis of statistical models as well as historical and scientific data. Assessing the likelihood of threats such as terrorist attacks is usually more of a qualitative effort, based mainly on intelligence and expert estimates, either to complement empirical data or as the sole relevant source. The preference for quantifiable data is due to the fact that risk analysis is a decision-making tool designed to ensure that the priority or appropriateness of measures used to counter specific threats is adequate for the existing risks. In other words, it is intended to produce 'actionable' knowledge on the basis of scientifically sound data.

Despite this general preference, the states queried for this report show varying degrees of emphasis on the definition of key concepts. However, the importance of defining concepts within a risk management strategy cannot be stressed enough. Identifying and defining key concepts such as risks, threats, and vulnerabilities gives the researcher a much-needed focus in a vast and diverse field and thus ultimately leads to broader comprehension, supports the process of assessments, and helps to guide policy.<sup>2</sup>

Among those states that do define key concepts, the Netherlands National Risk Assessment (NRA) defines risk as "a combination of impact (the total of the consequences of the scenario-incident) and likelihood (an expectation concerning the occurrence of the scenario-incident) with its consequences" and utilizes this approach to guide analysis and methodology. This is (with slight variations) the definition most often employed, which also corresponds closely to the definition developed by the classical risk analysis school.

The US Department of Homeland Security's (DHS) most current classification also regards risk as "the product of three principal variables: (1) Threat, or the likelihood of a type of attack occurring, (2) Vulnerability, or the relative exposure of an attack and (3) Consequence, or expected impact of an attack."<sup>3</sup> However, a closer examination of DHS reveals that while the headquarters operates on the basis of this definition and utilizes a particular methodology, not all DHS bodies embrace the same definition, and several of them thus approach risk differently. For example, the CRS report notes how the US Coast Guard, the Office for Domestic Preparedness, and the Homeland Infrastructure Threat and Risk Analysis Center (HITRAC)

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<sup>2</sup> United States Government Accountability Office (GAO) (2008), *Strengthening the Use of Risk Management Principles in Homeland Security*. p. 10. It should be noted that the US DHS currently does not have such a list of key terms.

<sup>3</sup> Masse, Todd; O'Neil, Siobhan; and Rollins, John (2007), *The Department of Homeland Security's Risk Assessment Methodology: Evolution, Issues, and Options for Congress*. United States CRS Report for Congress, February, pp. 6f.

utilize, define, and practice risk assessment in a manner that is different from the risk methodology utilized at the DHS headquarters.<sup>4</sup>

On the other hand, while the UK authorities take pride in their coordinated approach to risk management, which engages all levels of public administration from local to national government entities as well as communities, the National Risk Register (NRR) does not provide a clear definition of risk but rather identifies the *type* of risks that the UK is concerned with (as does Germany in its “Gefahrenbericht”).<sup>5</sup> However, the report makes a distinction between natural events as ‘hazards’ and malicious attacks as ‘threats’.

When it comes to an understanding of the various aspects of risk analysis, many nations could benefit from Sweden’s recently produced Risk and Vulnerability Analysis Guide (RVAG), which provides a useful chapter on terms and definitions. This guide, which seeks “to reduce risks and vulnerabilities and to strengthen society’s emergency preparedness”, lays out comprehensive definitions for significant terms such as ‘exceptional event’, ‘capability’, ‘threat’, ‘critical dependency’, ‘risk’, and ‘risk analysis’.<sup>6</sup> It defines vulnerability, for instance, as a measurement of “how much and how seriously a society or parts of a society are influenced by an event”, whereas risk is the probability that an event will occur and result in certain consequences.<sup>7</sup>

Canada’s report on Emergency Management also contains a glossary with (short) definitions. It has a focus on vulnerability to all hazards and risks and defines hazards as sources of potential harm or loss. Emergencies and disasters result when a hazard interacts with a vulnerability to produce serious and adverse consequences that may, for an undetermined period of time, exceed the ability to cope.<sup>8</sup> Germany also devotes an entire chapter to concepts and their definitions in its report, “Risiken für Deutschland”. This includes detailed and well-researched chapters on ‘Katastrophe’ (disaster), ‘Krise und Konflikt’ (crisis and conflict), ‘Gefahr’ (hazard, danger, threat), ‘Risiko’ (risk), and ‘Vulnerabilität’ (vulnerability).<sup>9</sup>

In conclusion, there is little variance in how risks and similar concepts are used and understood, but some difference in the depth of concept definitions. In all instances, risks are seen mainly as a negative phenomenon that needs to be minimized, but not as a possible chance (as in the case of risk definitions from the financial sector). In addition, it is noted more than once that risks imply that the future is subject to human agency and is thus (indirectly) shaped by those who conduct risk analyses in the present. However, there is little discussion about the pros and cons of conducting risk analyses in the field of security policy and the consequences thereof for domestic and international politics. It could be said, however, that practitioners could benefit from more in-depth and critical discussions among themselves about the advantages and disadvantages of a risk-analysis approach in the security political context. This would include a discussion about how to deal with risks that are exceedingly difficult to quantify.

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<sup>4</sup> Ibid., pp. 22f.

<sup>5</sup> United Kingdom (2008), *National Risk Register*. UK Cabinet Office, 8 August; Bundesamt für Bevölkerungsschutz und Katastrophenhilfe, *Dritter Gefahrenbericht der Schutzkommission beim Bundesminister des Innern – Bericht über mögliche Gefahren für die Bevölkerung bei Großkatastrophen und im Verteidigungsfall*.

<sup>6</sup> Swedish Emergency Management Agency (2008), *Risk and vulnerability analyses – guide for governmental agencies*, p. 12; see Chapter 2.3 for terms and definitions, p. 13.

<sup>7</sup> Ibid., p. 14.

<sup>8</sup> Canada Public Safety and Emergency Preparedness (2005), *An Emergency Management Framework for Canada*, p. 8.

<sup>9</sup> Bundesamt für Bevölkerungsschutz und Katastrophenhilfe. 2005. *Problemstudie: Risiken für Deutschland*.



## 2) *Threat Spectrum*

Evidently, what can be called an ‘all-hazards’ approach is a well-established preference among national security professionals. Most European countries have adopted an approach that takes into account a range of issues, from natural disasters to terrorist attacks, in their national risk assessment since the end of the 1990s. The US Department of Homeland Security (DHS), which was initially solely focused on the threats associated with terrorism, expanded its focus after the Hurricane Katrina disaster in 2005 to include other, non-terrorism-related risks.

Like other documents, the UK’s NRR relates to a broad risk spectrum. These risks include potential accidents, natural events, and malicious attacks. Under the heading of ‘natural events’, the report highlights emergencies that could arise from severe weather, flooding, and human or animal diseases.<sup>10</sup> The section discussing major accidents includes industrial and transport accidents, whereas malicious attacks include (terrorist) attacks in crowded locations and attacks aimed at critical infrastructure, transport systems, and information systems.<sup>11</sup> Within each of these sections, historical events are referenced. By its own admission, the NRR “only includes risks which are of sufficient severity that they would require central government to be involved in response.”<sup>12</sup> This is one way of differentiating between risks with relevance for national security and others with a more common or everyday character, a distinction that many states find difficult to make.

The Netherlands utilizes categories to define threats, rather than risks. These include natural threats (e.g., flooding) and malicious threats such as terrorist attacks.<sup>13</sup> Unlike the UK, it does not include accidents in its assessment.<sup>14</sup> Sweden, on the other hand, rarely mentions actual events that fall within its risk/threat spectrum. Chapter 4 of the RVAG calls on governmental agencies to “include threats and risks beyond the area of responsibility” and highlights how “serious contagion, extreme natural disasters, technical collapses, organized crime and international terrorism” are threats without boundaries, but no further information is provided.<sup>15</sup>

Germany’s Third Risk Report does not aim to serve as a compendium of all current threats to Germany; the decision on which topics to include in the report is based on a “Delphi survey” among experts in which three different timeframes for the occurrence of major hazards were used: imminent, medium-term, and long-term threats (up until 2016). The types of imminent hazards included in the report are: nuclear hazards; biological hazards; chemical hazards; hazards to the communication systems and data flows; hazards caused by electromagnetic pulse weapons; and hazards resulting from the release of kinetic and thermal energy. Medium and long-term threats are discussed as one category. Among them are chemical and biological hazards again, with a focus on epidemics and pandemics, zoonoses, and new pathogens resistant to treatment, but also general health problems such as resistance to antibiotics or shortages in supplies and medical staff. Also included are organized crime (illegal trafficking of weapons and humans)

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<sup>10</sup> United Kingdom (2008), *National Risk Register*. UK Cabinet Office, 8 August, pp. 10–18.

<sup>11</sup> *Ibid.*, pp. 18–30.

<sup>12</sup> *Ibid.*, p. 5.

<sup>13</sup> The Netherlands National Security Programme (2008), *National Risk Assessment Method Guide 2008*. June, p. 19. <http://www.minbzk.nl/bzk2006uk/subjects/public-safety/publications/115647/national-risk>.

<sup>14</sup> *Ibid.* See Chapter 4.3 and 4.4, pp. 21–5.

<sup>15</sup> Swedish Emergency Management Agency (2008), *Risk and vulnerability analyses – guide for governmental agencies*. pp. 25f.

as well as climate change, but also energy shortages, natural and environmental problems, as well as water shortages.<sup>16</sup>

Canada also uses an all-hazards approach, addressing vulnerabilities to both natural and human-induced hazards and disasters. Natural hazards and disasters include extreme natural events such as floods, hurricanes, landslides, tornados, and earthquakes. Human-induced disasters include intentional events, such as terrorist or cyber-attacks. They also include electrical power outages or other disruptions to a critical infrastructure sector that result from a human or technological accident or failure. In addition, this approach covers biological hazards, for example animal or human health diseases that could cause a pandemic influenza.<sup>17</sup>

In conclusion, there is little variation in terms of what kind of threats/risks are covered. Minor differences can be found in specific sub-themes and also in the 'granularity' of certain risks and the level of detail provided in the reports. The distinction between natural occurrences (which are often called 'hazards') and occurrences somehow related to human actions (often referred to as 'threats') is a common theme in most of the reports. In all cases, the tendency is to go 'as broad as possible' in the tradition of an all-hazards approach: The approach of covering a very broad spectrum of risks is closer to the tradition of emergency or crisis management than to that of national security, but has become the norm today. The main reason for this is that complex, unknown crises require a strategy of resilience and preparation as well as a mix of policies, organizations, and tools (both military and civilian).

### **3) Approaches and Products**

At the methodical level, most countries use scenarios to describe risks to national security. Even though they differ widely in scope and depth, scenarios are usually 'stories', containing a description of an event or series of actions and events as well as its implications/consequences. In a report of the Dutch government, a scenario is described as a portrayal of:

- (the nature and scale of) one or more related events (incidents) affecting national security;
- the lead-up to the incident, consisting of the (underlying) cause and the trigger that actually brings about the incident;
- the context of the events, indicating the general circumstances and the degree of vulnerability and resistance of individuals, objects, and society at large, where relevant to the incident described;
- the consequences of the incident, indicating the nature and scale;
- the effects of the incident on, for example, the continuity of critical infrastructure.<sup>18</sup>

Each risk or risk scenario is analyzed and assessed in terms of impact criteria that are related to the vital security interests and values of the society and state. While in most European countries, risk analysis and risk assessment follow a broader security concept that encompasses societal, environmental, and security aspects in equal parts – though approaches vary between a focus on societal security and safety in the Scandinavian countries or the Netherlands, and emphasis on resilience in the UK – the risk assessment

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<sup>16</sup> Bundesamt für Bevölkerungsschutz und Katastrophenhilfe, *Dritter Gefahrenbericht der Schutzkommission beim Bundesminister des Innern – Bericht über mögliche Gefahren für die Bevölkerung bei Großkatastrophen und im Verteidigungsfall*, p. 12.

<sup>17</sup> *Ibid.*, p. 8.

<sup>18</sup> The Netherlands National Security Programme (2008), *National Risk Assessment Method Guide 2008*. June, pp. 21f. <http://www.minbzk.nl/bzk2006uk/subjects/public-safety/publications/115647/national-risk>.

model used by the DHS is still geared toward terrorism as the main challenge to national security (even though natural disasters have gained prominence, as mentioned above).

The comparison and evaluation of risks is intended to rank the threats and risks that have been assessed based on probability and impact, in accordance with the prevalent definition of risk as discussed in chapter 1. Evaluation can be and actually is conducted in different ways and with different methods, but the results are usually presented in the form of a risk diagram or matrix that allows categorization of the risks, estimating their likelihood and impact.<sup>19</sup> As noted before, risk management practices optimally facilitate improved decision-making by clarifying the dimensions of risk, including its causes, likelihood of occurrence and possible severity of consequences. Some states note that placing greater emphasis on risk reduction measures is a sustainable way to address the trend of rising social-economic costs of disasters that have been incurred under approaches focused heavily on preparedness and response.<sup>20</sup>

Besides the development of scenarios as basic tools and products of risk analysis, the end products of risk assessment processes include databases and periodical (annual) reports to national governments (in the US: reports to Congress). These reports, as well as the scenarios developed, serve as a basis for resource allocation, strategic planning, capability-building, and emergency preparedness. In the Netherlands, for example, the government decides whether, and if so, where and how, national security must be strengthened. Political and administrative choices are then converted into policy, legislation, and concrete action.<sup>21</sup> Likewise, the UK's National Risk Register (NRR) is a key element to the British national security strategy.<sup>22</sup>

In terms of who is responsible for risk analysis, the DHS as a principal actor in the field of homeland security in the US analyzes risks using an analytical model developed in conjunction with other federal entities.<sup>23</sup> In European countries, such as the Netherlands or the UK, specialist departments and governmental agencies are responsible for national risk assessment and development of scenarios, together with the scientific institutes, planning bureaus, and experts involved.<sup>24</sup> In other words, the persons responsible and levels of government involved vary greatly, but risk analyses are generally conducted with the help of topical experts of all sorts.

In conclusion, there is little variation in the methodological approaches to risk analysis (which is clearly linked to the similarity in defining what risks are and in aiming for quantifiable data) or the representation of risks as scenarios. However, there is a lot a variety when it comes to the 'products' that are generated from the analysis (concerning the type of report, but also the depth and detail of these reports). There is also a considerable difference in how risk analysis is integrated into the broader political landscape. In both, the UK and the Netherlands, risk analysis seems to have a direct influence on top-level national security documents. In other countries, risk analysis is conducted mainly for operational purposes.

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<sup>19</sup> Swedish Emergency Management Agency (2008), *Risk and vulnerability analyses – guide for governmental agencies*, p. 38; National Security Programme. National Risk Assessment Method Guide 2008, June, pp. 8f.

<sup>20</sup> Swedish Emergency Management Agency (2008), *Risk and vulnerability analyses – guide for governmental agencies*, p. 5.

<sup>21</sup> The Netherlands National Security Programme (2008), *National Risk Assessment Method Guide 2008*. June. p. 13. <http://www.minbzk.nl/bzk2006uk/subjects/public-safety/publications/115647/national-risk>.

<sup>22</sup> The National Security Strategy of the United Kingdom. Security in an interdependent world, March 2008, p. 43.

<sup>23</sup> Masse, Todd; O'Neil, Siobhan; and Rollins, John (2007), *The Department of Homeland Security's Risk Assessment Methodology: Evolution, Issues, and Options for Congress*. United States CRS Report for Congress, February, p. 6.

<sup>24</sup> National Security Programme. *National Risk Assessment Method Guide 2008*, p. 16; United Kingdom (2008), *National Risk Register*. UK Cabinet Office, 8 August, p. 43.

#### 4) Further Points of Interest

In the larger context of the governmental scan, two additional issues are noteworthy. On the one hand, it can be observed that several recent government reports deal with the issue of risk (and crisis) communication. On the other, several countries have published 'self-help' guides for the general population. Both issues are briefly addressed below.

##### *Risk Communication*

Recent government reports on risk and crisis communication in the UK, Sweden, and Germany are aimed at raising awareness of the centrality and usefulness of a good risk communication in public agencies, and advise them on how to improve their respective capabilities. While risk communication deals with long-term strategic messages on mostly uncertain developments, crisis communication becomes relevant in the event of an unfolding emergency. These terms are not always well defined or differentiated. Both of these, communication about risks as well as communication during a crisis, are highly demanding processes that may both ameliorate or worsen a particular situation. Effective risk communication can help to prevent crises from developing, ensure a smoother implementation of policies to tackle risks, empower and reassure the public, and build trust in government and the information it provides.<sup>25</sup> Obviously, the opposite is the case if risks are badly communicated. Crisis communication, on the other hand, is a core emergency management function that affects the development of events and shapes the crisis response.<sup>26</sup> If such communication is inadequate, crises are aggravated and confidence in public authorities vanishes.

As a 2008 forum of experts convened by the US Government Accountability Office (GAO) found, long-term risk communication poses the single greatest challenge to the establishment of a culture of risk management, which is understood as a process that helps policy-makers to assess risks, strategically allocate finite resources, and to take actions under conditions of uncertainty. To address this challenge, it is recommended that the public and policy-makers be educated about possible risks and the value of using risk management to establish priorities and allocate resources, and to engage in a discussion in order to reach a public consensus on an acceptable level of risk.<sup>27</sup>

This trend shows that risk assessment is a process that can only be conducted in a satisfactory manner if dialog is recognized as one of the crucial elements. This dialog should not only involve other security-relevant authorities at different administrative levels, but also include the private sector and academia as well as the broader public.

##### *Self-help*

Another trend in risk management involves raising public awareness regarding risks and their local impact as well as informing the public about basic provisions and actions that everyone should adhere to in order

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<sup>25</sup> Cf. UK Resilience. *Communicating Risk*.

<http://www.ukresilience.gov.uk/media/ukresilience/assets/communicatingrisk.pdf>.

<sup>26</sup> Cf. Swedish Emergency Management Agency (SEMA), 2008. *Crisis Communications Handbook*.

[http://www.krisberedskapsmyndigheten.se/upload/17023/crisis\\_communicationhandbok\\_utb-ser\\_2008-3.pdf](http://www.krisberedskapsmyndigheten.se/upload/17023/crisis_communicationhandbok_utb-ser_2008-3.pdf); and

Bundesministerium des Innern. 2008. *Krisenkommunikation – Leitfaden für Behörden und Unternehmen*.

<http://www.bmi.bund.de/Internet/Content/Common/Anlagen/Broschueren/2008/Krisenkommunikation,templateId=raw,property=publicationFile.pdf/Krisenkommunikation.pdf>.

<sup>27</sup> Government Accountability Office (GAO) (2008), *Strengthening the Use of Risk Management Principles in Homeland Security*. <http://www.gao.gov/new.items/do8904t.pdf>.

to lessen personal damage. These guidelines for the population – recent examples can be found in Austria, France, Germany, Italy, and the UK – usually inform citizens about the most likely emergencies, such as floods, earthquakes, industrial accidents, outage of essential services, etc., and outline specific measures to be taken before, during, and after such an incident. Also included are general provisions irrespective of a particular incident, such as where and how to get help, the preparation of a medicine chest, hygiene tips, the stockpiling of foodstuff and water, etc. In addition, specific instructions on how to act/react in case of an emergency are given (e.g. go and stay inside, turn on radio/TV, neighborhood/disability help, etc.). The countries observed for this report have built dedicated websites<sup>28</sup> to this end and/or have published handbooks/brochures.<sup>29</sup>

It is worth noting that these guidelines are not designed to shift responsibility from public authorities to the population. Rather, the plausible assumption is made that the initial response to an emergency always relies on those immediately affected. Accordingly, the guidelines aim to empower the population as far as possible and to prevent proactively the spreading of fear and panic.

This approach to information policy is also related to the aforementioned desire to establish a long-term strategic risk communication process. By publishing specific information and advice regarding various risks, the authorities involve the general population and may foster a public discourse on risks and their consequences. Self-help is also related to the concept of resilience, understood in a broad sense as the resilience of the entire society.

### **5) Possible Lessons for Switzerland**

In general, Switzerland's risk analysis efforts do not differ much from what this report found in other countries, neither with regard to the use of concepts nor in terms of the threat spectrum covered. However, Switzerland might have more of a 'troubled' history with regard to its risk and vulnerability analysis than others. Compared to other countries, Switzerland began to undertake efforts in this field relatively early. As far back as 1992, the Federal Council tasked the federal administration with the development of a comprehensive risk analysis for Switzerland. The aim of the project was the collection, evaluation, and comparison of existential risks that threatened Switzerland, especially in order to allocate funds more efficiently. The first comprehensive report "*Risikoprofil Schweiz 1999*" – describing major risks to Switzerland by using a scenario-based methodology – remained unpublished, mainly for political reasons. This history might be an explanation why in Switzerland risk analysis is less well integrated into the broader political process than in other countries. At the moment, risk analysis is largely fragmented within the federal administration and still largely uncoordinated. The biggest detriment arguably is the lack of integration of any risk and vulnerability analyses into the larger security political planning process leading to a national security strategy.

There is no doubt, however, that the importance of risk analysis and management will further increase in the coming years, especially since there is no real alternative when it comes to dealing with modern chal-

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<sup>28</sup> E.g. Austria: <http://www.sicherheitsinformationszentrum.at/>; Canada: <http://www.getprepared.gc.ca/>; France: <http://www.prim.net/>; UK: <http://www.preparingforemergencies.gov.uk/>.

<sup>29</sup> E.g. Italy: Dipartimento Della Protezione Civile. 2008. *The Civil Protection Handbook for Families*.

[http://www.protezionecivile.it/cms/view.php?dir\\_pk=188&cms\\_pk=2878](http://www.protezionecivile.it/cms/view.php?dir_pk=188&cms_pk=2878).

Germany: Bundesamt für Bevölkerungsschutz und Katastrophenhilfe. 2007. *Für den Notfall vorgesorgt – Vorsorge und Eigenhilfe in Notsituationen*.

[http://www.bbk.bund.de/cln\\_027/nn\\_398720/SharedDocs/Publikationen/Brosch\\_C3\\_BCren\\_\\_und\\_\\_Faltbl\\_C3\\_A4tter\\_20Download/Broschuere\\_\\_Notfall,templateId=raw,property=publicationFile.pdf/Broschuere\\_\\_Notfall.pdf](http://www.bbk.bund.de/cln_027/nn_398720/SharedDocs/Publikationen/Brosch_C3_BCren__und__Faltbl_C3_A4tter_20Download/Broschuere__Notfall,templateId=raw,property=publicationFile.pdf/Broschuere__Notfall.pdf).

lenges. The need for constant assessment of new challenges has even increased with the rapid change in the security environment. The project “*Risiken Schweiz*” led by the Swiss Federal Office for Civil Protection (FOCP) tries to reinvigorate coordination of these efforts. In the future, the project aims to provide a basis for a comprehensive risk management by federal agencies and authorities in different political levels – in the form of a documentation of threats to the security of Switzerland. The project includes three steps marked by the following milestones: 1) elaboration of a comprehensive, but adaptable catalog of threats following an all-hazards approach; 2) development of consistent basis scenarios; and 3) assessment of the scenarios in a national risk and threat analysis. It becomes clear from the comparison with other countries that the project’s acceptance in the political process and a clear added-value of such an undertaking are crucial for success, the main reason for why the FOCP has thought an official mandate from the Federal Council. It also becomes obvious that one of the difficult questions to tackle is how to differentiate between risks with relevance for national security and others that are more common or everyday in nature.<sup>30</sup> As noted above, addressing a very wide-ranging spectrum of risks is much more in line with the focus of the emergency or crisis management community than with the one employed by the traditional national security community. The FOCP is in the right position for addressing such a wide-ranging spectrum, precisely because it is rooted in a tradition that is closer to the emergency/crisis management community. However, it will still have to take care in defining its role as an actor in the national security community, especially in relation to the more traditional actors.

In addition, Switzerland remains challenged by the important question of how to deal with the reality of highly decentralized and fragmented responsibilities (not only on the cantonal level but also within the federal administration). This is not only a matter of coordinating various ongoing efforts, but also has implications for the prioritization of funds and for the implementation of measures on various levels. Alas, if risk analysis is falsely seen as ultimately leading to resource re-allocation, it risks becoming a political ‘hot potato’, despite the fact that it is not the analysis itself that leads to actions, but the political process that may be fueled by the analysis. There can be no doubt, however, that it is the responsibility of political actors to ensure that funds are appropriately distributed and necessary measures undertaken – and this can only be done on an informed basis regarding risks and vulnerabilities.

Regarding the two points mentioned in chapter 4, the Swiss government has distributed responsibility for *crisis communication* among various agencies with specific knowledge in a certain field. For example, the National Emergency Operations Center (NEOC) with its headquarters in Zurich is (as part of the FOCP) responsible for communicating and dealing with emergency situations such as increased radioactivity, large-scale chemical accidents, dam bursts or reservoir overspill, and satellite re-entry. In other cases such as pandemics, it is the Federal Office of Public Health that is responsible. *Risk communication*, on the other hand, is not a main concern of the Swiss federal agencies. It could be argued that risk communication should be an integral part of the “*Risiken Schweiz*” project at some stage, especially when considering a broad dialog with all sorts of stakeholders. As seen in other countries, self-help guides can also be valuable tools in this effort.

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<sup>30</sup> The project covers “Ereignisse und Entwicklungen, die die Bevölkerung und ihre Lebensgrundlagen gefährden oder zumindest das Fortführen des Lebens in der gewohnten Weise erheblich einschränken.”

## **6) Annotated Bibliography**

This annotated bibliography contains a) government reports and other policy documents from the scan described on page 1 (only texts that have some link to risk analysis are included); b) a selection of internet resources from government actors; c) a selection of risk analysis resources from universities; d) general internet resources.

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### *Government reports and other policy documents*

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#### **Canada**

Canada Public Safety and Emergency Preparedness (2005), *An Emergency Management Framework for Canada*. Available at: <[http://www.ps-sp.gc.ca/prg/em/\\_fl/emfrmwrk-en.pdf](http://www.ps-sp.gc.ca/prg/em/_fl/emfrmwrk-en.pdf)>

The Canadian emergency management adopts an all-hazards approach that addresses both natural and human-induced hazards and disasters. This framework lays out four interdependent risk-based functions, which include: Prevention and Mitigation (reduce or eliminate the impact of risks); Preparedness (actions taken to build response efforts); Response (action during or immediately after a disaster to mitigate negative effects); Recovery (repair or restore efforts). The document was created to support legal and policy frameworks, programs, activities, standards and other measures so to encourage collaboration and coherence amongst Canadian emergency management partners.

#### **Denmark**

Denmark (2004), *Proclamation of the Danish Preparedness Act LBK no. 137 of 01/03/2004 (In force)*. Available at: <[http://www.brs.dk/uk/danish\\_preparedness\\_act.htm](http://www.brs.dk/uk/danish_preparedness_act.htm)>

The fundamental principle of emergency preparedness and response in Denmark is that the authority, company, or institution with the day-to-day responsibility of a given area is also responsible for that area in the event of a major accident or disaster. This is the so-called 'sector responsibility' principle. The Danish Preparedness Act has established that the individual government ministers have a duty to ensure that there are plans for maintenance and re-establishment of society's vital functions in their area of responsibility in the event of accidents or disasters. This applies particularly to critical infrastructure such as electricity, IT, water, and transport. Efficient planning can only take place in close co-operation with the public and private companies and institutions that normally handle those areas. While this document does not directly address risk analysis matters, it has an impact on how risk analysis is organized and conducted.

Denmark (2008), *Report: A National Security Strategy for Denmark*. Available at: <<http://www.difms.dk/index.php?id=14133>>

A report of May 2008 entitled 'Compass and Contract: For a Danish Security Strategy' (only in Danish) concluded that Denmark needs a new national security strategy. The substance of security politics has changed since the end of the Cold War, but Denmark has not updated its procedures regarding security policy accordingly. The report sees a clear need for integrated political steering in the shape of a national security strategy, which can serve both as a compass for the administrative system and as a contract for the political realm, including parliament and the public. The national security strategy document should be part of a broader process of national security, ensuring that professional and political stakeholders are consulted when constructing and evaluating the strategy. It is too early to say what role risk analysis will play in this context, but it seems clear that it will have some influence.

## **Finland**

Finland (2004), *Finnish Security and Defence Policy 2004; Government Report to Parliament*, 24 September. Available at: <[http://www.defmin.fi/files/311/2574\\_2160\\_English\\_White\\_paper\\_2004\\_1\\_.pdf](http://www.defmin.fi/files/311/2574_2160_English_White_paper_2004_1_.pdf)>

The Security and Defence Policy Report 2004 is the Finnish government's basic position, setting out the principles and objectives for Finland's security and defense policy and providing a framework for its implementation in the different sectors. The report conducts a thorough examination of the change in Finland's international environment and its effects on Finland's capability as well as on comprehensive security into the 2010s. The assessment of both external and internal risks to national security creates the basis for determining the course of action. Based on these considerations, the report shows the development and resource needs that focus on the different dimensions of the capability, external capability, especially crisis management capability, defense, maintenance of internal security, and the safeguarding of society's central basic functions. The strategic guidelines are based on risk studies and reports about the state of internal security and on a long-term statistical evaluation and include the areas of civil defense and rescue services; organized and serious crime; cyber crime; terrorism; immigration; and environmental security.

Finland (2006), *The Strategy for Securing the Functions Vital to Society; Government resolution 23*, November. Available at: <<http://formin.finland.fi/public/default.aspx?nodeid=37107&contentlan=2&culture=en-US>>

The Finnish government resolution on the Strategy for Securing the Functions Vital to Society upholds the goals of national sovereignty, the security of society, and the livelihood of the population in all security situations. Taking into account the internationalization of, as well as changes in, the security environment and structures of society, the document lists and defines society's vital functions, determines their desired end states, and assigns strategic tasks to ministries. Furthermore, the resolution presents nine scenarios describing the threats that jeopardize the vital functions of society and its stability. The threat scenarios included in the strategy are: disturbance in the electricity grid; serious disturbance affecting the health and income security of the population, serious disturbance in the functioning of the economy; major accidents and natural disasters; environmental threats; terrorism as well as organized and other serious crime; threats linked to migration; political, economic, and military pressure; and the use of military force.

## **France**

Ministère de l'Ecologie, du Développement et de l'Aménagement Durables (2006), *Le plan de prévention des risques technologiques (PPRT) – Guide méthodologique*. Available at: <[http://catalogue.prim.net/73\\_\\_dppr-guide-pprt-v5tbd.pdf](http://catalogue.prim.net/73__dppr-guide-pprt-v5tbd.pdf)> (in French)

The plan for the prevention of technological risks aims at supporting government agencies to define a strategy for dealing with risks posed by industrial sites. The guide is primarily intended for government services to assist them in developing prevention plans, assessing the dangers of a particular industrial site, and in taking the appropriate precautionary measures. The latter includes risk reduction measures at the source and rules for city and land-use planning as well as for construction, and allows for measures such as land expropriation.

French Ministère de l'Ecologie, du Développement et de l'Aménagement durables (2006), *Le plan de prévention des risques naturels – un outil pour une stratégie globale de prévention*. Available at: <[http://catalogue.prim.net/59\\_\\_ppr-plaq4p-v11-bd.pdf](http://catalogue.prim.net/59__ppr-plaq4p-v11-bd.pdf)> (in French)

On a general basis, this short brochure explains the French 'plans de prévention des risques (PPR) naturels', which have to be prepared by local communities and actors for certain regions that are particularly exposed. It explains the objectives of a prevention policy, outlines the use and role of a PPR towards this end, and briefly explains the content required in a PPR.



## Germany

Zukunftsforum Öffentliche Sicherheit (2008), *Grünbuch: Risiken und Herausforderungen für die Öffentliche Sicherheit in Deutschland – Szenarien und Leitfragen*. Available at: <<http://www.zukunftsforum-oeffentliche-sicherheit.de/gb-downloads/>> (in German) and <<http://www.zukunftsforum-oeffentliche-sicherheit.de/englisch-version/>> (in English)

The 'Zukunftsforum Öffentliche Sicherheit' was created by a multi-party initiative within the German Bundestag. The Green Paper illustrates the changed conditions of public security and presents scenarios based on these changes – including power cuts, terrorism, organized crime, and epidemics –, which were elaborated by leading experts. The nature of these scenarios and the interdependences between them pose entirely new challenges. The presentation of these new or previously disregarded interrelationships is intended to stimulate a public debate. The Green Paper contains important aspects for the direction of possible future decisions, but without presenting political solutions. It also covers basic principles in drawing up scenarios and calls for a modern definition of security. The Green Paper contains an extensive appendix.

Bundesministerium des Innern (2008), *Krisenkommunikation – Leitfaden für Behörden und Unternehmen*. Available at: <<http://www.bmi.bund.de/Internet/Content/Common/Anlagen/Broschueren/2008/Krisenkommunikation,templateId=raw,property=publicationFile.pdf/Krisenkommunikation.pdf>> (in German)

This guide is intended to support government agencies and companies in assessing and optimizing their crisis communication capabilities and structures. It contains basic crisis communication principles and recommendations and outlines the various communication phases during a crisis and their peculiarities. The guide offers advice on how to set up a particular crisis communication plan as well as on how to target messages during a crisis to a specific audience. It also contains checklists and recommended actions.

Bundesamt für Bevölkerungsschutz und Katastrophenhilfe (2007), *Für den Notfall vorgesorgt – Vorsorge und Eigenhilfe in Notsituationen*. Available at: <[http://www.bbk.bund.de/cln\\_027/nn\\_398720/SharedDocs/Publikationen/Brosch\\_C3\\_BCren\\_\\_und\\_\\_Faltbl\\_C3\\_A4tter\\_2oDownload/Broschuere\\_\\_Notfall,templateId=raw,property=publicationFile.pdf/Broschuere\\_\\_Notfall.pdf](http://www.bbk.bund.de/cln_027/nn_398720/SharedDocs/Publikationen/Brosch_C3_BCren__und__Faltbl_C3_A4tter_2oDownload/Broschuere__Notfall,templateId=raw,property=publicationFile.pdf/Broschuere__Notfall.pdf)> (in German)

This guide is targeted at the general public. It informs the reader on the best way to respond to various emergencies such as floods, fires, thunderstorms, and CBRN incidents, and offers detailed recommendations for each scenario. It provides information on general preparedness and self-help measures such as storing food and drinking water as well as preparing a proper medicine chest, and contains several checklists for consideration and preparation.

Bundesamt für Bevölkerungsschutz und Katastrophenhilfe (2006), *Dritter Gefahrenbericht der Schutzkommission beim Bundesminister des Innern – Bericht über mögliche Gefahren für die Bevölkerung bei Großkatastrophen und im Verteidigungsfall*. Available at: <[http://www.bbk.bund.de/cln\\_027/nn\\_529818/Schutzkommission/SharedDocs/Publikationen/Band\\_2059,templateId=raw,property=publicationFile.pdf/Band%2059.pdf](http://www.bbk.bund.de/cln_027/nn_529818/Schutzkommission/SharedDocs/Publikationen/Band_2059,templateId=raw,property=publicationFile.pdf/Band%2059.pdf)> (in German)

The Third Risk Report as presented by the Advisory Board for Civil Protection in March 2006 to the German Interior Ministry gives an assessment of both the broad spectrum of imminent threats facing Germany and the provisions needed to meet them. In this report, expert considerations of possible future events are investigated, a distinction between CBRN and other types of risks is made, and a systematic assessment of existing gaps in emergency preparedness and response is carried out. In addition, a rationale for the resulting list of priorities is given and an outlook of the future is suggested. The report is not a compendium of all current threats to Germany. The

types of hazards included in the report are: nuclear hazards; biological hazards; chemical hazards; hazards to the communication systems and data flows; hazards caused by electromagnetic pulse weapons; and hazards resulting from the release of kinetic and thermal energy.

Bundesamt für Bevölkerungsschutz und Katastrophenhilfe (2005), *Problemstudie: Risiken für Deutschland, Teil 1 und 2*. Available at:

<[http://www.bbk.bund.de/cIn\\_027/nn\\_398732/SharedDocs/Publikationen/Wissenschaftsforum/Risiken-fuer-D\\_\\_Teil1,templateId=raw,property=publicationFile.pdf/Risiken-fuer-D\\_Teil1.pdf](http://www.bbk.bund.de/cIn_027/nn_398732/SharedDocs/Publikationen/Wissenschaftsforum/Risiken-fuer-D__Teil1,templateId=raw,property=publicationFile.pdf/Risiken-fuer-D_Teil1.pdf)> and

<[http://www.bbk.bund.de/cIn\\_027/nn\\_398732/SharedDocs/Publikationen/Wissenschaftsforum/Risiken-fuer-D\\_\\_Teil2,templateId=raw,property=publicationFile.pdf/Risiken-fuer-D\\_Teil2.pdf](http://www.bbk.bund.de/cIn_027/nn_398732/SharedDocs/Publikationen/Wissenschaftsforum/Risiken-fuer-D__Teil2,templateId=raw,property=publicationFile.pdf/Risiken-fuer-D_Teil2.pdf)> (in German)

On a qualitative basis, this study characterizes and evaluates potential hazards and disasters that might pose extraordinary dangers to the society and the economy of Germany. It discusses preventive as well as response measures and draws conclusions for an effective civil protection system. Topics covered include: natural disasters, societal and political-military dangers, CBRN and related technical hazards, the potential for the protection of the population and related deficits, as well as critical infrastructure protection in various sectors.

### **Italy**

Dipartimento Della Protezione Civile (2008), *The Civil Protection Handbook for Families*. Available at:

<[http://www.protezionecivile.it/cms/view.php?dir\\_pk=188&cms\\_pk=2878](http://www.protezionecivile.it/cms/view.php?dir_pk=188&cms_pk=2878)> (in Italian and English)

This handbook provides a practical guide for families and the population in general on how to prevent, protect and prepare for various hazards and disasters. It characterizes various risks, provides suggestions and answers, explains what to do and how, and points out both dangerous and appropriate responses to various emergencies.

### **The Netherlands**

The Netherlands (2007), *The National Security Strategy and Work Programme 2007–2008*, May. Available at: <<http://www.minbzk.nl/bzk2006uk/subjects/public-safety/publications/106955/national-security>>

This Dutch National Security Strategy outlines a coherent framework for the roles and responsibilities of all parties in order to protect Dutch society and citizens against internal and external threats. This strategy is based on an integrated, whole-of-government approach to national security that encompasses both security and safety. The document defines vital interests of the Dutch state and/or society and describes the working method for conducting risk analysis. Its aim is to determine which threats endanger the national security and how to anticipate those threats, irrespective of their origin or nature. The method described in the document should assist the Dutch government in determining priorities and acting upon them, and clarifies interrelations between various possible responses. The National Security Strategy and Work Programme 2007–2008 is considered a guide for implementing the working method as presented in the national security strategy, using an incremental approach.

The Netherlands National Security Programme (2008), *National Risk Assessment Method Guide 2008*. June. Available at: <<http://www.minbzk.nl/bzk2006uk/subjects/public-safety/publications/115647/national-risk>>

As a part of the analysis phase in the National Security Strategy, the national risk assessment (NRA) lists risks and threats to the security of the Netherlands, analyses them, and formulates (single or multiple) scenarios. The purpose of the guide is to describe the national risk assessment process as well as the documentation and justification of choices made. Furthermore, it aims to explain the methodology employed in developing the scenarios. Scenarios for floods, pandemics, long-term failures of utility supplies, and for terrorist attacks are described, backed up by figures, and aggregated. In this way, the risks to national security are rendered comparable, and it is

possible to prioritize actions. In addition, the risk assessment considers the likelihood that a scenario may occur and its impact on the vital interests of territorial security, physical safety, economic security, ecological security, and socio-political stability.

### **Norway**

Norway (2005), *Royal Decree (concerning major accidents, 24. June.)*. Available at:

<[http://www.dsb.no/File.asp?File=PDF/2008/DSB\\_aarsmelding\\_2007\\_Eng\\_Lav.pdf](http://www.dsb.no/File.asp?File=PDF/2008/DSB_aarsmelding_2007_Eng_Lav.pdf)>

The Norwegian Ministry of Justice and the Police has responsibility for coordinating and supervising civil protection and emergency planning. The Directorate for Civil Protection and Emergency Planning (DSB) supports the ministry's coordinating and supervisory role in this area in the civilian sector. The Royal Decree of 24 June 2005 gives DSB the responsibility for coordinating supervision of activities, objects, and enterprises that have the potential for causing major accidents. This coordinating responsibility covers all sectors, including both those that come under DSB's special area of jurisdiction and those that are covered by other legislation.

*The following official documents on the Norwegian concept of societal security and Civil Crisis Response System were only published in Norwegian and are not accessible in English and/or are confidential.*<sup>31</sup>

- White Paper no. 37 (2004–2005) on societal security,
- Civil Crisis Response System (SBS-05) CONFIDENTIAL,
- In spring 2008, the Norwegian Ministry of Justice and the Police announced plans to submit a white paper on civil protection.<sup>32</sup>

### **Sweden**

Swedish Emergency Management Agency (2005), *Threats and Risks Report*. Available at:

<<http://www.krisberedskapsmyndigheten.se/upload/3040/2005%20threats%20and%20risk%20report.pdf>>

This annually recurring SEMA compilation aims to provide an integrated description and analysis of the risks and threats that parties involved in the Swedish emergency management system should take into consideration in their work with crisis preparedness measures. The report addresses all persons charged with crisis management functions at the national, regional, or local levels. It lists and discusses risks and threats to society in order to develop and increase emergency and crisis preparedness, but does not prioritize the identified risks.

Swedish Emergency Management Agency (2008), *Risk and vulnerability analyses – guide for governmental agencies*. Available at:

<[http://www.krisberedskapsmyndigheten.se/upload/17115/risk\\_sarbarhet\\_eng\\_rek\\_2008-3.pdf](http://www.krisberedskapsmyndigheten.se/upload/17115/risk_sarbarhet_eng_rek_2008-3.pdf)>

The guide addresses risk and vulnerability analyses as a part of governmental agencies' security efforts and as a means of preventing risks and preparing for exceptional events. It discusses what a risk and vulnerability analysis should embrace and defines critical societal functions from an emergency preparedness perspective. Moreover, the document describes the initial part of the analysis phase (identification of threats/risks) and provides guidance for assessing and ranking identified threats and risks based on their probabilities and consequences.

### **United Kingdom**

United Kingdom Government (2008), *Preparing for Emergencies: What you need to know*. Available at:

<<http://www.preparingforemergencies.gov.uk/you/booklet/pdfs/england2.pdf>>

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<sup>31</sup> This information is available at: <<http://www.dsb.no/>>.

<sup>32</sup> see <[http://www.riksrevisjonen.no/en/WhatsNew/PressReleases/Press\\_release\\_Doc\\_no\\_3\\_4\\_2007\\_2008\\_civil\\_protection.htm](http://www.riksrevisjonen.no/en/WhatsNew/PressReleases/Press_release_Doc_no_3_4_2007_2008_civil_protection.htm)>.

This booklet, provided in multiple languages, is a user-friendly guide for the UK general public and provides very basic information about, i.e., what to do in an emergency, about how to manage specific emergencies, prepare and assist in the prevention of terrorist attacks, about governmental protection activities, and emergency contact details. This publication is significant in that it is a direct guide for the community and seeks to engage community members by providing educational tools to ensure their safety. It is model example of government-sponsored programs to enhance community resilience through engagement.

United Kingdom (2008), *National Risk Register*. UK Cabinet Office, 8 August. Available at: <[http://www.cabinetoffice.gov.uk/~media/assets/www.cabinetoffice.gov.uk/publications/reports/national\\_risk\\_register/national\\_risk\\_register%20pdf.ashx](http://www.cabinetoffice.gov.uk/~media/assets/www.cabinetoffice.gov.uk/publications/reports/national_risk_register/national_risk_register%20pdf.ashx)>

The UK published the National Risk Register, which provides a fairly detailed assessment of the likelihood and potential impact of a range of different risks that could affect communities over the next five years in the UK. It summarizes risks into three categories: accidents, natural events (e.g., hazards), and malicious attacks (e.g., threats). Its primary purpose is to serve as an educational tool that increases community awareness of key risks to the UK and how to be prepared. The register also includes details of what the government and emergency services are doing to prepare for emergencies.

### **United States**

Masse, Todd; O'Neil, Siobhan; and Rollins, John (2007), *The Department of Homeland Security's Risk Assessment Methodology: Evolution, Issues, and Options for Congress*, United States CRS Report for Congress. 2 February. Available at: <<http://www.fas.org/sgp/crs/homsec/RL33858.pdf>>

This report provides an overview of risk assessment methodologies that have been used by DHS since its inception and describes how DHS has used risk management and assessment tools to distribute grants. The grant program is an important element of DHS, as it allows the agency to measure and influence state preparedness. The report concludes by providing options for DHS in assessing risk and distributing grants. Options range from continuing with the status quo to developing a comprehensive strategy for managing and mitigating risk in the long term.

United States Government Accountability Office (GAO) (2008), *Strengthening the Use of Risk Management Principles in Homeland Security*, Testimony Before the Subcommittee on Transportation Security and Infrastructure Protection, Homeland Security Committee, House of Representatives. Available at: <<http://www.gao.gov/new.items/do8904t.pdf>>

GAO convened a forum of 25 national and international experts to advance a national dialog on applying risk management to homeland security. Participants included federal, state, and local officials and risk management experts from the private sector and academia. Forum participants identified (1) what they considered to be effective risk management practices used by organizations from the private and public sectors and (2) key challenges to applying risk management to homeland security and actions that could be taken to address them. Participants identified three key challenges to strengthening the use of risk management in homeland security – risk communication, political obstacles to making risk-based investments, and a lack of strategic thinking.

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### *Governmental internet resources (selection)*

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### **Austria**

Bundesministerium für Inneres, *Sicherheitsinformationszentrum (SIZ)*. Available at: <<http://www.sicherheitsinformationszentrum.at/>>

The main tasks of the Safety and Security Information Centres (SIZ), which are supervised by the Austrian Civil Defense Association, are the provision of general information on civil protection and self-help to the public; the organization of courses and training on a local level; information and advice on all aspects of self-protection; and the promotion of neighborhood assistance. The SIZ homepage is Austria's biggest safety and security database and serves as the shared communication platform of all SIZ centers in Austria. It offers up-to-date information on safety and security for the population as well as for the local communities.

### **Canada**

Government of Canada, *Get prepared*. Available at: <<http://getprepared.ca>>

'Get prepared' is a Canadian web portal that informs the population on risks and hazards on a regional basis and on how to prepare for an emergency. The latter includes advice on setting up a household emergency plan, preparing an emergency kit as well as on best practices during and after an emergency.

### **France**

Ministère de l'Écologie, de l'Énergie, du Développement durable et de l'Aménagement du territoire, *Portail de la prévention des risques majeurs*. Available at: <<http://www.prim.net/>>

Prim.net is a web portal dedicated to the prevention of major risks in France. It provides information on the characteristics and causes of various natural and technical disasters, their potential geographical occurrence, and on how citizens can protect themselves and limit the effects of an incident. It aims at contributing to a shared culture of risk in France.

*Catalogue numérique des risques majeurs*. Available at: <<http://catalogue.prim.net/>>;

*Cartographie et prévention des risques majeurs*. Available at: <<http://cartorisque.prim.net/>>

The catalog offers all the publications of the ministry in this area, which provide detailed information on various topics pertaining to major risks and their prevention. The mapping provides detailed information on major risks on a geographical basis for each of France's *départements* (administrative territorial subdivisions).

### **United Kingdom**

*Community Risk Registers (UK)*. Available at:

<<http://www.preparingforemergencies.gov.uk/crr/index.shtm>>

The site is tool that provides guidance for civilians on how best to prepare themselves and their communities for an emergency or disaster. It is based around the Preparing for Emergencies booklet that was published in August 2004.

*UK Resilience* Available at: <<http://www.ukresilience.gov.uk/>>

The UK Resilience website provides a resource for civil protection practitioners, supporting ongoing work across the UK to improve emergency preparedness.

### **United States**

*DHS Office of Risk Management and Analysis*. Available at:

<[http://www.dhs.gov/xabout/structure/gc\\_1185203978952.shtm](http://www.dhs.gov/xabout/structure/gc_1185203978952.shtm)>

The Office of Risk Management and Analysis is responsible for synchronizing, integrating, and coordinating risk management and risk analysis approaches within the Department of Homeland Security.

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*University resources*

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*Harvard Center for Risk Analysis*. Available at: <<http://www.hcra.harvard.edu/>>

The Harvard Center for Risk Analysis (HCRA) is a multidisciplinary group of faculty, research staff, and students working together to improve decisions about environmental health. It aims at improving risk analysis methodology and creating a better understanding of causal mechanisms linking various hazards and human health and environmental risks. It also provides risk analyses for policy-makers and features several publications.

*King's College London – Centre for Risk Management (KCRM)*. Available at:

<<http://www.kcl.ac.uk/projects/kcrm>>

KCRM engages in research on risk management, governance, and communication while working closely with government organizations, businesses, and NGOs. It also offers advanced postgraduate studies in risk; it supports masters and doctoral programs.

*The Center for Hazard and Risk Research (HCRR) – Columbia University*. Available at:

<<http://www.ldeo.columbia.edu/chrr/index.html>>

The Center for Hazard and Risk Research (HCRR) draws on Columbia University's expertise in Earth and environmental sciences, engineering, social sciences, public policy, public health, and business. Basic research in the field ranges from engineering studies of earthquakes, landslides, volcanic eruptions, etc. to man-made environmental hazards. It also attempts to improve our understanding of the role humans play in hazards, societal vulnerability and impact, and core policy and management decisions.

*Institute of Hazard and Risk Research – University of Durham*. Available at: <<http://www.dur.ac.uk/ihr/>>

The Institute of Hazard and Risk Research is an interdisciplinary research institute committed to fundamental research on hazards and risks and policy recommendations. Organized across seven core themes, its research aims to improve human responses to both age-old hazards such as volcanoes, earthquakes, landslides, and floods as well as the new and uncertain risks of climate change, terrorism, and emerging technologies.

*Wharton – University of Pennsylvania, Risk Management and Decision Processes Center*. Available at:

<<http://opim.wharton.upenn.edu/risk/>>

The Wharton Risk Management and Decision Processes Center has been conducting research on the management of low-probability/high-consequence events for over 20 years. The center focuses on descriptive research and prescriptive analyses and publishes information in the area of risk management.

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*Other internet resources*

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*DIALOGIK*. Available at: <<http://www.dialogik-expert.de/>>

DIALOGIK is a non-profit institute conducting research on practical forms of communication and cooperation in politics, economics, and civil society. Among other activities, it engages in basic research on risk governance and cooperates with international organization (e.g., the European Commission) in several projects.

*European Institute for Risk Management (EIRM)*. Available at: <<http://www.eirm.net/oak.jsp>>

The European Institute for Risk Management (EIRM) is an independent membership-based knowledge network that gathers and disseminates the most current information on a broad range of topics within public- and private-sector risk management. EIRM aims at assisting top-level decision-makers in risk-related issues through sharing information. Additionally, EIRM also provides an online 'Certificate in Risk Management' course and organizes international conferences.

*Federation of European Risk Management Associations*. Available at: <<http://www.ferma.eu/>>

FERMA serves as a forum for dialog between the National Risk Management Associations of 13 countries. It was established in 1974. It aims at creating more awareness and expertise in the risk management business throughout Europe. FERMA promotes solutions and techniques of risk management, shares information among its members, and conducts various educational and research projects.

*Foresight – UK*. Available at: <<http://www.foresight.gov.uk/index.asp>>

Foresight was established by the British government in the early 1990s. Its aim is to provide visions of the future and catch trends at an early point in time. Foresight advises policy-makers and provides policy and strategy recommendations. Foresight serves as a platform for knowledge exchange that allows experts to look beyond normal planning horizons in order to identify potentials of new science and technologies.

*Global Facility for Disaster Reduction and Recovery (GFDRR)*. Available at:  
<<http://gfdrr.org/index.cfm?Page=home&ItemID=200>>

The Global Facility for Disaster Reduction and Recovery (GFDRR) is a joint project of the World Bank and several developed countries to support governments in the integration of risk reduction strategies and climate change adaptation in development processes, especially in countries where risks are high. In particular, GFDRR assists developing countries with funding for development projects and programs improving local capabilities in terms of emergency preparedness and disaster prevention. It also seeks to strengthen cooperation between local, national, and intergovernmental bodies in these strategies.

*Global Risk Forum (GRF)*. Available at: <<http://www.grforum.org/>>

The Global Risk Forum (GRF) is a newly established international organization based in Davos, Switzerland. It aims at serving as a center of knowledge and know-how exchange for the application of contemporary risk management strategies, tools and practical solutions. The GRF is structured along three pillars: the Risk Academy, the International Disaster and Risk Conferences (IDRC), and the Platform for Networks.

*International Country Risk Guide (ICRG)*. Available at: <<http://www.prsgroup.com/ICRG.aspx>>

The PRS Group offers two publicly available methodology models: the Political Risk Services and the International Country Risk Guide (ICRG). The former presents a method of quantifying and rating political risk, while the latter rates countries according to 22 variables in three subcategories: political, financial, and economic risk.

*International Risk Governance Council (IRGC)*. Available at: <<http://www.irgc.org/>>

The IRGC aims at creating awareness and understanding of global risks that affect society in general, such as health issues or economic risks. The organization focuses on emerging systemic risks where governance is lacking and provides policy recommendations.

*Organisation for Economic Cooperation and Development (OECD)*. Available at:  
<[www.oecd.org/department/0,3355,en\\_2649\\_34375\\_1\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/department/0,3355,en_2649_34375_1_1_1_1_1,00.html)>

The OECD is an intergovernmental organization whose activities include research, particularly in the economic realm to support sustainable economic growth. It also provides a forum for sharing expertise. The aim of the OECD Risk Management Programme is to develop methodologies in support of government and industry efforts to manage risks posed by chemicals, and, when appropriate, to harmonize risk management activities on particular chemicals. This site features several articles and publications on risk management regarding chemical industry risks.

*United Nations International Strategy for Disaster Reduction (UN ISDR), Prevention Web.* Available at: <<http://preventionweb.net/>>

PreventionWeb.net of the UN/ISDR is a website for increasing knowledge sharing on disaster risk reduction issues. It provides a common tool for both specialists and non-specialists interested or working in disaster risk reduction to connect, exchange experiences and share information at all relevant levels. The website includes disaster risk reduction news, country reports, publications, good practices, fact sheets, as well as information on networks and communities.

*Resources for the Future.* Available at:

<[http://www.rff.org/Research\\_Topics/Pages/Risk\\_Management.aspx](http://www.rff.org/Research_Topics/Pages/Risk_Management.aspx)>

Resources for the Future (RFF) is a nonprofit and nonpartisan organization that conducts independent research on environmental, energy, and natural resource issues, as well as risk analysis. The risk research conducted by RFF aims at bridging the gap between theoretical advances in risk and uncertainty assessment and their effective application to real-world policy.

*Security Analysis and Risk Management Association (SARMA).* Available at: <<http://sarma.org/>>

SARMA is a non-profit professional association serving those responsible for analyzing and managing security risks to systems, structures and operations from man-made threats. It provides a forum for the further development, standardization, and professionalization of the security analysis and risk management discipline. SARMA provides leadership, education, and certification to risk management professionals.

*Society for Risk Analysis (SRA).* Available at: <<http://www.sra.org/>>

The Society for Risk Analysis is a multidisciplinary, interdisciplinary, scholarly, international society that offers an open forum for exchange on risk analysis. It aims at bringing together people from different fields of expertise and promoting research and education in risk analysis.

*Stiftung Risiko-Dialog.* Available at: <<http://www.risiko-dialog.ch/>>

The Risk Dialogue Foundation offers a discussion forum that brings together different stakeholder groups, especially experts in the fields of science, politics, or economics and from public administration and NGOs. The questions addressed range from energy security to concerns over nanoparticles or telecommunications. The aim is to find innovative solutions through dialog and create awareness in the assessment of risks.

*World Economic Forum – Global Risk Network.* Available at:

<<http://www.weforum.org/en/initiatives/globalrisk/index.htm/>>

The World Economic Forum is an independent international organization that engages leaders in partnerships to shape global, regional, and industry agendas. Its main publication is *The Global Risk Report*, released annually ahead of the World Economic Forum's Annual Meeting in Davos. In addition, it publishes several regional and topical reports.

*World Institute for Disaster Risk Management (DRM).* Available at: <<http://www.drmonline.net/>>

DRM is a network for applied research, implementation, and dissemination in the field of disaster risk management. It was initiated by the Board of the Swiss Federal Institutes of Technology and Virginia Polytechnic Institute, but also counts private companies such as Swiss Re among its participants. DRM aims at creating more awareness of risk management and serves as a forum of cooperative activities in applied research, research applications, and professional practice in order to reduce disaster risks, particularly in vulnerable parts of the world. It hosts a series of projects with international organizations, such as the World Bank, and national governments.



## Part 2: Issues and Trends in the Academic Literature

There is a vast body of academic literature in the field of risk analysis. In this section, we will therefore only provide a very cursory overview: In chapter 1, we discuss the more applied or policy-relevant parts of the literature. In chapter 2, we address some of the most recent developments in the field of international relations and security studies. Both chapters are followed by annotated bibliographies.

### 1) *Applied / Policy-Relevant Research*

Over a period roughly covering the last two decades, the fundamentals of security governance have changed. This ubiquitous change is reflected terminologically in the shift that has taken place from conceptualizing danger in terms of threats towards conceptualizing them in terms of risks. Risk and its practical governance is, as opposed to threat, bound to a) uncertainty about how the future will evolve and therefore b) gives rise to thinking in terms of probabilities.<sup>33</sup> The research literature committed to applied risk governance addresses the issues at stake and the solutions that are available to those responsible for mitigating risks. Practitioners must do so within the contemporary risk landscape, which is characterized by interdependency, complexity, and uncertainty.

However, the applied research literature on risk analysis and risk management is not only vast, but is also highly diverse in focus and includes an almost inexhaustible list of issue areas. A prominent risk expert identified seven approaches to both the conception and the measurement of risk in 1992, which are largely grounded in various academic disciplines. These approaches include the actuarial approach using statistical predictions, the toxicological and epidemiological approach including ecotoxicology, the engineering approach based on probabilistic risk assessment, the economic approach using risk-benefit comparisons, the psychological approach using psychometric analysis, the sociological approach, and the cultural approach using grid-group analysis.<sup>34</sup> All these approaches vary in terms of the selection of the underlying base unit, the choice of methodologies, the basic problem areas, the complexity of risk measures, and the instrumental and social functions of the perspective. While there are other ways to classify the huge variety of approaches to risk analysis, this particular approach shows clearly how interdisciplinary and multidisciplinary the field is and reflects the fact that the training and preference of the researcher will lead to different focal points and different results. It is all the more important to be clear about how one understands (and defines) risks and related concepts.

While the diversity highlighted by Ortwin Renn's classification is a key characteristic of risk research and literature, our focus in the following annotated bibliography lies on those risk assessment and management issues that we assess as having relevance for government practitioners. These include the journals committed to risk analysis, research, assessment, and management with a clear focus on practical issues, as opposed to purely academic and theoretically oriented research and literature, as well as some recent monographs assembling academic and practical perspectives on the politics and governance of risks.

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<sup>33</sup> Habegger, Beat (2008), 'Risk Analysis and Management in a Dynamic Risk Landscape', in Habegger, Beat (ed.), *International Handbook on Risk Analysis and Management*, CSS ETH Zurich, pp. 13-31.

<sup>34</sup> Renn, Ortwin (1992), 'Concepts of Risk: A Classification', in Sheldon Krinsky and Dominik Golding (eds.), *Social Theories of Risk*, Westport: Praeger, pp. 56f.

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*Annotated Bibliography - Applied Research*

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### **Journals**

*Risk Analysis: An International Journal*. Available at:

<<http://www.blackwellpublishing.com/journal.asp?ref=0272-4332>>

Published on behalf of the Society for Risk Analysis, this international journal is committed to publishing critical empirical research, conference proceedings, and commentaries dealing with risk issues. It covers topics such as health risks, engineering, risk characterization, communication, and management, but also deals with laws and regulatory policy, risk perception, acceptability, ethics, and ecological risks. This journal conceives risk analysis as an interdisciplinary science that relies on epidemiological and laboratory studies, collection of exposure and other field data, computer modeling, and related social and economic and communication considerations. Additionally, the social dimensions of risk are occasionally addressed. Therefore, the articles published by the journal cover topics as diverse as quality of drinking water, air and land contamination, the safety of foods and drugs, automobile and infrastructure safety, and risks associated with weapons of mass destruction.

*Journal of Risk Research*. Available at: <<http://www.tandf.co.uk/journals/journal.asp?issn=1366-9877&linktype=1>>

As the official journal of the Society for Risk Analysis Europe and the Society for Risk Analysis Japan, the Journal of Risk Research publishes theoretical and empirical research articles within the risk field from the areas of social, physical, and health sciences and engineering, as well as articles related to decision-making, regulation, and policy issues. This journal aims at stimulating intellectual debate, to promote better risk management practices and to contribute to the development of risk management methodologies.

*International Journal of Risk Assessment and Management (IJRAM)*. Available at:

<<http://www.inderscience.com/browse/index.php?journalID=24#top>>

The International Journal of Risk Assessment and Management is conceived as an interdisciplinary journal whose coverage includes theory and models, as well as methodology and case studies emphasizing the principles and theory of risk assessment and management, risk assessment policy, standards and regulations, risk-based decision-making, risk perception, communications, assessment, control and characterization, the integration of risk models and quantifications, and more. IJRAM strives to provide both interdisciplinary learning and a forum for researchers and practitioners to disseminate information and learn from each other's work.

*Risk Management: An International Journal*. Available at:

<<http://www.palgravejournals.com/rm/index.html>>

Risk Management is an international journal focusing on issues of interest to the 'risk business'. It aims to facilitate the exchange of information and expertise across countries and across disciplines with the purpose of generating ideas and promoting good practices for those involved in the business of managing risk. The journal covers a broad array of topics including, among others, the identification of risk, contingency planning, recovery programs, continuity management, organizational strategy risk, risk policies, financial risk management, and risk forecasting.

Forum: *Qualitative Social Research, Special Issue 'Learning About Risk'*, vol. 7(1), 2006. Available at:

<<http://www.qualitative-research.net/index.php/fqs/issue/view/2>>

This multilingual, academically-oriented online journal for qualitative research published a special issue on risk in 2006. The special issue draws on an interdisciplinary network on risk that examines risks in a range of areas from partnering choices over mass media to pensions and financial planning, industrial pollution, crime, transport, en-

ergy policy, and environmental hazards. The special issue has four topical sections on Identity, Everyday Life and Social Inequality; on Risk Communication, Media, and Discourse; on Government, Regulation, and Risk; and on Theorising Risk. The contributions of relevance to this overview include:

- Lunt, Peter; Livingstone, Sonia; Kelay, Tanika; and Miller, Laura, 'Approaches to Risk and Consumer Policy in Financial Service in the UK'.
- Simons, Johannes and Lensch, Anne Katrin, 'How to Encourage Individual Contributions to Reduce Food Borne Risks'.
- Twyman, Matt; Harries, Clare; and Harvey, Nigel, 'Learning to Use and Assess Advice about Risk'.
- Jackson, Jonathan; Allum, Nick; and Gaskell, George, 'Bridging Levels of Analysis in Risk Perception Research: The Case of the Fear of Crime'.
- Klinke, Andreas and Renn, Ortwin, 'Systemic Risks as Challenges for Policy Making in Risk Governance'.
- Seigneur, Viviane, 'The Problems of the Defining the Risk: The Case of Mountaineering'.
- Havey, Nigel; Twyman, Matt; and Harries Clare, 'Making Decisions for Other People: The Problem of Judging Acceptable Risk'.
- Zinn, Jens O., 'Risk, Affect and Emotion'.
- Zinn, Jens O., 'Recent Developments in Sociological Risk Theory'.

### **Monographs / Book Chapters**

Bracken, Paul; Bremmer, Ian; and Gordon, David (eds.) (2008), *Managing Strategic Surprise. Lessons form Risk Management and Risk Assessment*, Cambridge: Cambridge University Press.

This recent (September 2008) book on risk management and international affairs applies the theories and concepts of risk management to national security challenges such as early warning, intelligence management, terrorism, state failure, defense, non-proliferation, and energy security. It features contributions from risk experts and national security experts and utilizes examples from case histories such as the 11 September 2001 attacks and the US banking crisis. Venturing into uncharted water, the book strives to bring together risk management experts and practitioners from different fields with internationally recognized national security scholars to produce a systematic inquiry into risk and its application in national security. The contributions examine whether and under what circumstances advanced risk assessment and management techniques can be successfully applied to address contemporary national security challenges.

George Mason University (2007), Critical Infrastructure Protection Program, *Critical Infrastructure Protection: Elements of Risk*. Available at: <[http://cipp.gmu.edu/archive/RiskMonograph\\_1207\\_r.pdf](http://cipp.gmu.edu/archive/RiskMonograph_1207_r.pdf)>

Edited by the George Mason University's Critical Infrastructure Protection Program, this risk monograph strives to enhance knowledge of risk in the US homeland security context. The book aims at an analysis of the recent move towards the more focused risk-informed approach to critical infrastructure protection discernible in the US. It addresses numerous topics related to risk, including the definition of risk, assessment methodologies, and strategic approaches to risk management. The various contributions within the volume offer suggestions for improved risk management, provide information on current practices as examples of risk-related efforts in the US, and allude to continued growth in this dynamic field.

Habegger, Beat (ed.) (2008), *International Handbook on Risk Analysis and Management. Professional Experiences*, Zurich: Center for Security Studies at ETH Zurich. Available at:

<[http://www.crn.ethz.ch/publications/crn\\_team/detail.cfm?id=47038](http://www.crn.ethz.ch/publications/crn_team/detail.cfm?id=47038)>

The International Handbook on Risk Analysis and Management gives insight into professional practices and methodological approaches of risk analysis and management. It shows how risk analysts and decision-makers in different professional contexts deal with risk and uncertainty by identifying upcoming issues, assessing future threats, and implementing successful mitigation policies. Following an introduction by the editor that thoroughly discusses the issue of risk analysis and management in the dynamic risk landscape, the volume addresses the features at stake in three separate sections: the first on Civil Protection/Defense Organizations with contribu-

tions from Germany, Sweden, and Switzerland; the second on Intelligence Services, Armed Forces, and Multilateral Institutions with contributions from Switzerland, the UK, Canada Germany, and the OSCE; and the third section addressing Financial and Insurance Businesses issues with contributions from the private sector (banking and (re-) insurance) as well as from academia.

Power, Michael (2004), *The Risk Management of Everything: Rethinking the Politics of Uncertainty*, London: Demos.

This monograph has a pronouncedly organizational focus. The author's main thesis is that we live in the age of the risk management of everything. Paradoxically, this still leaves organizations that engage in risk management exposed to what Donald Rumsfeld called 'unknown unknowns' which, by definition, are out of reach of risk management. In this context, the author holds, reputation – where organizational identity and economic survival are at stake – has become the new source of anxiety. Therefore, the author concludes that professionals, companies, and governments are attempting to protect their reputations by avoiding risks they would traditionally absorb on behalf of the public – they are increasingly taking defensive steps to protect their own standing, rather than managing risks.

Renn, Ortwin (1998), 'Three Decades of Risk Research: Accomplishments and New Challenges', *Journal of Risk Research* 1 (1), pp. 49–71.

The problem with the worldwide spread of risk assessment methodology is, the author of this article argues, that formal analysis may obscure the conceptual foundations and limitations of its method and may induce a false degree of certainty when dealing with potential side-effects of human actions and interventions. One of the main tasks of the risk community should be to emphasize the necessity of integrated risk assessment and the development of innovative risk management strategies that build upon the insights of the natural, technical, and social sciences. In order to integrate risk assessment and risk perception, the article analyses this strengths and weaknesses of each approach to risk analysis and highlights the potential contributions that the technical sciences and the social sciences can offer to risk management.

## 2) Security Studies Literature: Towards Reflexive Security

Like the world of policy-making, the field of security studies has undergone significant change in recent years. Even if the relationship between the policy world and the academic field of security studies is not always easy to grasp, both domains acknowledge that there are additional threats and additional actors to be considered. Arguably the biggest paradigm shift in security studies was caused by the rise of constructivist research, a development that has primarily taken place in Europe. Most prominent among the new approaches to security is the so-called Copenhagen school, which focuses on how issues are turned into security problems in the political process and how the perception of issues by key actors has a considerable impact on their beliefs and actions.<sup>35</sup> More recently – following some of the key assumptions of the Copenhagen school – a debate has emerged in the field of security studies, centering on ideas developed by German sociologist Ulrich Beck on the risk society and reflexive modernity.

Governing by means of risk has changed over time as it has become attached to different types of rationalities and techniques. It is not the concept of risk that is new, but rather the “manifold ways in which the future can be assessed, calculated and mastered”.<sup>36</sup> For one scholar, risk today is a “family of ways of thinking and acting, involving calculations about probable futures in the present followed by interventions into the present in order to control that potential future”.<sup>37</sup> This, according to these scholars, has substantial consequences for a) how security issues are perceived and b) how these issues are approached and handled. In other words, rather than focusing on how to approach and handle risk issues, critical security studies scholars focus on how risks as a method, tool, and mode of thinking are changing the way policy-makers see the world and ultimately act on their perception.

Some of the key points raised in this literature are the following:

- *No objectivity, no apolitical analysis*: Because risks are indirect, unintended, uncertain, and situated in the future, their nature is indeterminate. Therefore, any attempt to define risks objectively is futile, as the perception and definition of risks will be contested between different social groups. Security politics are constituted by “definitional struggles over the scale, degrees and urgency of risks”.<sup>38</sup> What this means is that there is no such thing as apolitical analysis. Furthermore, because risk statements carry consequences, the representation of risk is subject to political manipulation.<sup>39</sup>
- *Global risks contradict the language of control in industrial societies*: Under conditions of extreme uncertainty, decision-makers are no longer able to guarantee predictability, security, and control, so that of the real challenge is “how to feign control over the uncontrollable”.<sup>40</sup> At the same time, expert knowledge is exposed as an insufficient and unreliable resource for political decisions. Rather, decisions appear as unfounded, arbitrary attempts to subdue the contingency of the future.

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<sup>35</sup> Buzan, Barry; Wæver, Ole; and de Wilde, Jaap (1998), *Security: A New Framework for Analysis*, Boulder: Lynne Rienner.

<sup>36</sup> Aradau, Claudia and Rens van Munster (2007), ‘Governing Terrorism Through Risk: Taking Precautions, (un)Knowing the Future’, *European Journal of International Relations*, vol. 13, no. 1, p. 95.

<sup>37</sup> Rose, Nikolas (2001), ‘The Politics of Life Itself’, *Theory, Culture & Society*, vol. 28, no. 6, p. 7.

<sup>38</sup> Beck, Ulrich (1999), *World Risk Society*, Cambridge: Polity Press, p. 46.

<sup>39</sup> Garland, David (2003), ‘The Rise of Risk’, in: Richard Ericson and Aaron Doyle (eds.), *Risk and Morality*, Toronto: University of Toronto Press, p. 6.

<sup>40</sup> Beck, Ulrich (2002), ‘The Terrorist Threat: World Risk Society Revisited’, *Theory, Culture & Society*, vol. 19, no. 4, p. 41.

- *The rise of reflexivity*: These processes result in a social awareness of the catastrophic impacts of risks and in a specific kind of reflexivity as a form of self-critique and self-transformation in the face of disastrous risks. According to Beck, reflexive modernization is the product of early modernity and its belief in advancement through ‘progress’, but in a dynamic inversion, reflexive modernity interrogates modernity, the very source of its power. In this day and age, reflexivity becomes the norm. Inadvertently, political practice of all sorts also becomes reflexive.
- *Reflexive security*: These notions have recently also been applied to the security field. According to Mikkel Rasmussen, the national security paradigm after the Second World War was “the high tide of means-ends rationality”,<sup>41</sup> the belief that an action produces particular (knowable, calculable) consequences. This rationality has been replaced by a reflexive rationality in an age of reflexive security. In this rationality, “the ways by which we try to solve our problems [...] become a ‘theme and a problem in itself’”.<sup>42</sup>

All of the points raised above have an influence on how knowledge can be created and lead, more importantly, to a severe clash with the tendency in risk analysis and management to adhere to measurability of issues, quantifiable data, and actionable knowledge. One key message that emerges from the literature discussed in this chapter is that the myths of perfect manageability must be laid to rest and an explicit discourse of possible failure initiated. Government organizations would no longer need to act as if all risks were controllable, and at the same time, this would open up a room for debate about the limitations of risk analysis.

In the annotated bibliography below, some of the key texts mentioned above are briefly summarized; some additional texts have been added. We look at special issues of journals as well as some monographs and book chapters.

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### *Annotated Bibliography - Security Studies Literature*

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#### **Journals / Journal Articles**

Global Society (2007), Journal of Interdisciplinary International Relations. *Special Issue: Risk and International Relations: A New Research Agenda?* vol. 21, issue 1.

This special issue of an international relations-oriented journal, adopting a pronouncedly interdisciplinary perspective on risk, queries the emergence of risk and risk analysis in the domain of IR. It addresses a broad array of issues including the following articles:

- Jarvis, Darryl S. L. and Griffiths, Martin, *Learning to Fly: The Evolution of Political Risk Analysis*.
- Jarvis, Darryl S. L., *Risk, Globalisation and the State: A Critical Appraisal of Ulrich Beck and the World Risk Society Thesis*.
- Carment, David; Gazo, John J.; and Prest, Stewart, *Risk Assessment and State Failure*.
- Germain, Randall D., *Global Finance, Risk and Governance*.
- O’Callaghan, Terry, *Disciplining Multinational Enterprises: The Regulatory Power of Reputation Risk*.
- Handmer, John and James, Paul, *Trust Us and Be Scared: The Changing nature of Contemporary Risk*.

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<sup>41</sup> Rasmussen, Mikkel Vedby (2001), ‘Reflexive Security: NATO and International Risk Society’, *Millennium: Journal of International Studies*, vol. 30, no. 2, p. 288.

<sup>42</sup> Rasmussen, Mikkel Vedby (2004), ‘It Sounds Like a Riddle: Security Studies, the War on Terror and Risk’, *Millennium: Journal of International Studies*, vol. 33, no. 2, p. 395.

Security Dialogue (2008), *Special Issue, Security, Technologies, and the Political*, vol. 39, no. 2-3.

This theoretically oriented journal, which generally seeks to publish analyses that challenge public policy across the wide-ranging field of security studies, produced an inspiring special issue on risk and risk analysis in April 2008. Among the notable articles in this special issue are the following:

- Aradau, Claudia; Lobo-Guerrero, Luis; and Van Munster, Rens, *Guest Editors' Introduction*.
- De Goede, Marieke, *Beyond Risk: Premediation and the Post-9/11 Security Imagination*.
- Elbe, Stefan, *Risking Lives: AIDS, Security and Three Concepts of Risk*.
- Muller, Benjamin J., *Securing the Political Imagination: Popular Culture, the Security Dispositif and the Biometric State*.
- Mythen, Gabe and Walklate, Sandra, *Terrorism, Risk and International Security: The Perils of Asking 'What If?'*.
- Salter, Mark B., *Imagining Numbers: Risk, Quantification, and Aviation Security*.
- Diprose, Rosalyn; Stephenson, Niamh; Mills, Catherine; Race, Kane; and Hawkins, Gay, *Governing the Future: The Paradigm of Prudence in Political Technologies of Risk Management*.
- Kessler, Oliver and Wouter, Werner, *Extrajudicial Killing as Risk Management*.
- Dillon, Michael, *Underwriting Security*.
- Lacy, Mark, *Designer Security: Control Society and MoMA's SAFE: Design Takes on Risk*.

Aradau, Claudia and Van Munster, Rens (2007), 'Governing Terrorism Through Risk: Taking Precautions, (un)Knowing the Future', *European Journal of International Relations*, vol 13 no 1 2007, pp. 89–115.

Examining what it means to 'govern through risk', this article departs from Ulrich Beck's thesis of the risk society. Arguing that the risk society thesis problematically views risk within a macro-sociological narrative of modernity, this article shows that governing terrorism through risk involves a permanent adjustment of traditional forms of risk management in light of the double infinity of catastrophic consequences and the incalculability of the risk of terrorism. This article explores precautionary risk and risk analysis as conceptual tools that can shed light on the heterogeneous practices that re-defined the so-called 'war on terrorism'.

Beck, Ulrich (2002), 'The Terrorist Threat: World Risk Society Revisited', *Theory, Culture & Society*, vol. 19, no. 4, pp. 39–55.

This article differentiates between three different axes of conflict in world risk society. The first axis is that of ecological conflicts. The second is global financial crises. The third, which has attracted special media attention since 2001, is the threat of transnational terror networks. Two sets of implications are drawn: first, there are the political dynamics of world risk society. In an age where religious and class allegiances have disappeared in parts of the world and faith in the concept of 'progress' is waning, humanity's common fear has proved the last – ambivalent – resource for making new bonds. Second, the methodological nationalism that preoccupies the sociological imagination has to be overcome and a 'methodological cosmopolitanism' has to be created.

Best, Jacqueline (2008), 'Ambiguity, Uncertainty, and Risk: Rethinking Indeterminacy', *International Political Sociology*, vol. 2, issue 4, pp. 355–74.

The author argues that critical international theory could benefit from a broader and deeper conception of the limits of knowledge – and that what is needed is more attention to the role of ambiguity in contemporary politics. This essay proposes that risk and uncertainty be regarded as two specific categories of indeterminacy that have come to preoccupy contemporary neoliberal thinkers and policy-makers, and hence their critics, but which nonetheless tend to downplay the interpretive dimensions of the limits of knowledge. Concluding with the case of international financial governance, this essay suggests that a focus on ambiguity will not only shed light on the historical evolution of global finance, but also provides us with some clues as to the sources of the current sub-prime financial crisis.

Daase, Christopher and Oliver Kessler (2007), *'Knowns and Unknowns in the "War on Terror": Uncertainty and the Political Construction of Danger'*, *Security Dialogue*, vol. 38, no. 4, pp. 411–34.

This article analyses how uncertainty is perceived and how danger is constructed in the global 'war on terror'. The authors first identify threats, risks, catastrophes, and ignorance as distinct kinds of danger; they then go on to demonstrate how different notions of probability are used to determine their magnitude and to assign political responsibility. They strive to show how the 'logic of danger' plays out in current anti-terror strategies and argue that security policy in general can only be explained if ways of managing non-knowledge are taken into account.

Rasmussen, Mikkel Vedby (2001), *'Reflexive Security: NATO and International Risk Society'*, *Millennium: Journal of International Studies*, vol. 30, no. 2, pp. 285–309.

The author departs from the assumption that NATO's consistent definition of the current security environment in terms of 'security challenges and risks' shows that risk is becoming the operative concept of transatlantic security. This article strives to explore how Ulrich Beck's theory of reflexive modernity, which is new to the discipline of International Relations, can illuminate NATO's redefinition of both the concept of security and its identity following the end of the Cold War.

Rasmussen, Mikkel Vedby (2004), *"It Sounds Like a Riddle": Security Studies, the War on Terror and Risk'*, *Millennium: Journal of International Studies*, vol. 33, no. 2, pp. 381–95.

This article maps the current achievements and future challenges of an emerging research program on risk in international security studies applying the sociological insights of Ulrich Beck's 'risk society' paradigm. The article discusses the nature of strategy in a risk environment and outlines the consequences of applying the concept of reflexive rationality to strategy.

Williams, M.J. (2008), *'(In)Security Studies, Reflexive Modernization and the Risk Society'*, *Cooperation and Conflict: Journal of the Nordic International Studies Association*, vol. 43, no. 1, pp. 57–79.

This recent and profoundly academic article addresses the challenge that confronts Western policy-makers in the management of diverse, amorphous, and qualitative security risks. It identifies the risk paradigm as calling into question many commonly used concepts in international relations, such as established forms of cooperation and the utility of force. The author examines both the new (academic) literature inspired by Ulrich Beck's writing and the challenges that the 'risk society' paradigm poses to international relations as an academic field of study.

Moreover, the author raises the need to reconsider thinking surrounding the use of force, security cooperation, and international law in the light of the security risks and challenges of today.

### **Monographs / Book Chapters**

Armoore, Louise and Goede, Marieke (eds.) (2008), *Risk and the War on Terror*, London and New York: Routledge.

This book strives to offer a comprehensive and critical investigation of the specific modes of risk calculation that are emerging in the so-called 'war on terrorism'. It provides an interdisciplinary set of contributions that debate and analyze both the empirical manifestations of risk in the 'war on terrorism' and their theoretical implications. The imperative to deploy public and private data in order to 'connect the dots' of terrorism risk raises important questions for social scientists and practitioners alike. These are addressed in the four sections of the book: 1. Risk, Precaution, Governance, 2. Crime, Deviance, Exception, 3. Biopolitics, Biometrics, Borders, and 4. Risk, Tactics, Resistances.



Bailes, Alyson J. K. (2007), *Introduction: A world of risk*, in SIPRI Yearbook 2007: Armaments, Disarmament and International Security, pp. 1–20.

This introductory chapter to the 2007 SIPRI Yearbook gives an excellent introduction to the manner in which the public security policy field has and still is appropriating the concept of risk as guiding its protective endeavors. The analysis discusses possible reasons why this is so and addresses the difficulties of defining and assessing risk in such a way that it can be a useful tool of defensive or constructive security policy. Furthermore, the author considers the range of different responses to risk, analyzes their strengths and weaknesses, and concludes that active and forceful efforts to eliminate risks sometimes do more damage than the necessarily imperfect impacts of these efforts can justify.

Beck, Ulrich (1999), *World Risk Society*, Cambridge: Polity Press.

This book draws together the key essays of one of Europe's leading social and political theorists on risk. In six sections, it scrutinizes the author's famous concept of a 'world risk society' from varying perspectives. Not only does the author query the notion of world risk society as a cosmopolitan society and derive ecological questions within a framework of so-called manufactured uncertainties, but he also traces the historical development from the industrialized society to a risk society. Further, the book addresses the welfare state in the context of the risk society, raises questions about the subpolitics of ecology and the disintegration of institutional power, and discusses whether knowledge or unawareness is the better strategy. In conclusion, the author discusses an amalgamation of insights derived from theory, politics, and critiques.

Coker, Christoph (2002), '*Globalization and Insecurity in the Twenty-First Century: NATO and the Management of Risk*', Adelphi Paper 345, London: International Institute of Security Studies.

This monograph scrutinizes NATO's risk management in the age of globalization. The author holds that not only is there an urgent need to address the security dimension, but that the US and Europe as the most globalized societies need to develop three strategies – one long-term and two short-term. As the core strategy, the author proclaims that NATO should resist the depoliticizing tendencies unleashed by globalization, and that it should and can play a political role in a global age as a rule-altering institution. The second strategy should strive to shape the environment by pursuing long-term political efforts to address the sources of conflict and instability in the world. The third strategy is derived from NATO's move to define its post-Cold War security policy in terms of risks management. Should that management fail, NATO needs a (fourth) strategy to hedge against disasters.

Daase, Christopher; Feske, Susanne M.; and Peters, Ingo (eds.) (2002), *Internationale Risikopolitik: Der Umgang mit neuen Gefahren in den internationalen Beziehungen*, Baden-Baden: Nomos.

This German-language edited volume assembles academic contributions to the discussions of risk conceptions, risk politics, and the paradoxes of risks in the context of contemporary international relations. The individual chapters address a broad array of issues including proliferation, migration, climate change, terrorism, computer crime, drug trafficking, and the financial system, but also the paradoxes of intervention and state failure.

Luhmann, Niklas (1993), *Risk: A Sociological Theory*, Berlin and New York: Walter de Gruyter.

This book, translated from the original German edition of 1991, displays how the future of human society increasingly depends on decisions to be taken within a context characterized by risk. This has varying implications within the different societal systems such as politics, legislation, science, and economics. The author's main thesis is that a gap is opening between those who are involved in the decision-making and those individuals outside government who are the ones to suffer directly from the actualization of the manifold risks. This gap is politically highly sensitive, while simultaneously also difficult to bridge.

**The Center for Security Studies** of the ETH Zurich (Swiss Federal Institute of Technology) was founded in 1986 and specializes in the fields of international relations and security policy. The Center for Security Studies is a member of the Center for Comparative and International Studies (CIS), which is a joint initiative between the ETH Zurich and the University of Zurich that specializes in the fields of comparative politics and international relations.

**The Crisis and Risk Network (CRN)** is an Internet and workshop initiative for international dialog on national-level security risks and vulnerabilities, critical infrastructure protection (CIP) and emergency preparedness.

As a complementary service to the International Relations and Security Network (ISN), the CRN is coordinated and developed by the Center for Security Studies at the Swiss Federal Institute of Technology (ETH) Zurich, Switzerland. ([www.crn.ethz.ch](http://www.crn.ethz.ch))