The next disaster – Collaboration, risk communication and action capacity in Norway after the 22.07 terror (NEXUS)

1. Relevance relative to the call for proposals

The NEXUS project studies the way organizational culture and cultural dynamics influence on collaboration, risk communication and action capacity between public agencies involved with creating and maintaining societal safety. The horrible terror acts of July 22nd 2011 constituted the most brutal audit of Norwegian society's level of emergency preparedness, and our ability to deal with major security events. The results of this audit, as described by the Gjørv Commission (NOU 2012: 14), were disheartening on a number of areas. In particular, there seem to be a pressing need to understand and improve the communication, collaboration and exchange of information between the various public and private actors that are involved in creating societal safety. In addition, the Gjørv Commission questioned the action capacity of public agencies and authorities, i.e. the ability to move from risk assessments to the successful implementation of risk reducing measures. In sum, the Commission's report points to fundamental problems related to risk understanding and safety culture in agencies responsible for emergency preparedness in Norway

This is the point of departure for the NEXUS project. The problem to be addressed in the problem is the following: **To which extent and in what way have the general lessons from the 22.07 terror acts been translated into concrete measures that increase the level of societal safety and emergency preparedness?** This question has a practical side, as it can help shed light on potential changes in the level of societal safety and preparedness. It is also a question with theoretical implications: The aftermath of a disaster such as 22.07 provides a unique case for studying the ability to implement new knowledge and learning, while at the same time shedding light on how cultural dynamics influences on action capacity, collaboration and risk communication across organizational interfaces. The aim is to understand the role of the nexuses between organizations in creating societal safety and a high level of emergency preparedness.

The aftermath of crises has a tendency to turn into 'morality plays' (Boin, 't Hart, Stern and Sundelius 2007) where fingers are pointed towards leaders' incompetence, lack of risk sensitivity, or lack of action capacity. This often takes the form of blame games where heads are rolled as part of the process of the 'cultural readjustment' that marks the transition between a crisis and the new normal situation (Turner 1978). An important question in this respect is to what extent we put our efforts into creating "rites of passage" that allows us to leave the previous disaster behind us, or if we use the aftermath of a crisis to actively prepare for the next disaster. This is a timely question in the aftermath of 22.07, as responses to crises provide opportunities to build cultures, and reveal aspects of the culture already built.

2. Aspects relating to the research project

2.1. Background and status of knowledge

Culture and preparedness – the Gjørv report

The 22.07 terror acts included a rare combination of the thinkable and the unthinkable. The bombing of the Government Complex in Oslo was thinkable. The risk of a car bomb had been identified years in advance, and obvious risk-reducing measures (the closing of the street Grubbegata) had been identified. A right-wing extremist killing 69 youth politicians at Utøya as a secondary attack constituted a hitherto unthinkable event. While there have been disasters like school shootings in several parts of Europe and the US, the Utøya shooting could be classified as a "black swan" event, at least in a Norwegian context (Taleb 2007).

The findings and key concepts of the Gjørv Commission reflect this combination of the thinkable and unthinkable. Special emphasis is placed both on our ability widen our limits of the thinkable to recognize new risks, and our ability to implement risk-reducing measures to mitigate the risks that are already known. In addition we see the need to develop action capacity to handle

unexpected events and recover, often described as resilience, as described by Hollnagel et al (2006). The commission provides a total of 31 improvement measures, where they emphasize attitudes and culture as the most important:

> *"the Commission's most important recommendation is that managers at all levels of public administration work systematically towards improving their own and their organizations' attitudes and cultures towards risk recognitions, action capacity[1], collaboration, utilization of ICT and goal-oriented leadership"* (NOU 2012: 14, p 458. Our translation).

This recommendation has two important implications. First, it points to fundamental weaknesses in the way societal safety and emergency preparedness is maintained. Second, it points to the importance of leaders working with the cultures of their organizations. This implies that we cannot expect the identified weaknesses to be corrected if our approaches do not include organizational development aimed at changing the very way we think about risk and safety. Whether such processes have been initiated, and the various forms they may have taken, will be a key topic of the NEXUS project.

Safety culture

The investigation into the Chernobyl accident is ubiquitously cited as the origin of the concept of safety culture. However, the linking of the concepts of culture and safety can be traced at least back to Barry Turner's seminal Man-Made Disasters (1978). Turner, while not explicitly using the term culture, pioneered the field of safety culture by studying how accidents could be the results of a form of "collective blindness" shared by the members of an organization.

Despite the concept of safety culture being described as "underspecified and overrated" (Clarke 2000: 65) and a "concept in chaos" (Zhang et al., 2002: 1), it is possible to divide the existing research on safety culture into three broad schools or research traditions: 1) the psychological perspective, 2) the engineering perspective and 3) the organizational perspective (Antonsen, 2009a). The psychological perspective can be traced back to earlier research on safety climate (Zohar 1980), and is oriented towards the study of attitudes, values and behavior related to safety (Pidgeon 1997). The engineering approach, on the other hand, places safety management systems, rules and procedures as the primary object under study. Studies by Mitchison and Papadakis (1999) and Duijm and Goossens (2006) can be seen as examples of this approach. The organizational perspective is the most recent approach to safety culture, where more sociological/anthropological conceptions of culture are utilized. This research is oriented at understanding norms, learning processes, and construction of meaning related to safety. This involves connecting the study of safety culture more closely to perspectives from organizational theory and more general theories of safety (e.g. Pidgeon 1997; Gherardi et al. 1998; Gherardi & Nicolini 2000; Antonsen 2009b).

These three schools of thought are all part of a a more general shift away from the assumption that individuals and organizations follow a strictly rational and intentional logic. Most organizational theorists now agree that shared beliefs and norms can provide quite specific rules for actions, thus forming 'irrational' foundations of organizational action (Brunsson, 2000). The interest in safety culture is also undoubtedly associated with the quest for more proactive approaches to safety management. While traditional measures of safety levels rests on retrospective data like accident/ incident records, knowledge about safety culture is thought, or at least hoped, to provide information that allows for making safety improvements without having to wait for accidents to happen

In the NEXUS project, we will use the definition by Antonsen (2009a) as our primary conceptualization of safety culture (see section 2.2). The definition includes the cognitive frames that limit our imagination regarding what is thinkable and unthinkable, possible and impossible, both when it comes to risks and improvement measures. It also emphasizes the "do's and dont's" of organizational life when it comes to collaboration, action capacity and risk communication across organizational interfaces. However, the level of cultural integration between the different actors

[1] Translation of the Norwegian "gjennomføringsevne".

contributing to societal safety should not be overestimated (e.g. Van Maanen & Barley 1985; Antonsen 2009b). Different public agencies should in many respects be analyzed as different cultural units which can have different understandings of risks, roles and responsibilities. The existence of differentiated risk understandings across important organizational interfaces should, however be treated as an empirical phenomenon and will be a key research question in the NEXUS project.

Research gaps related to safety culture and organizational interfaces

While there are a myriad of approaches to the study of safety culture, much research seems to share the same empirical focus: They are all mainly describing cultural traits among operative personnel (e.g. process operators, firefighters, doctors, air traffic controllers). This operative bias means that we know very little about how safety cultures may make their presence felt in the "blunt end" of organizations (e.g. administration and management) where many of the framework conditions for dealing with risk are being decided (Kongsvik et al., 2013). Also, there are very few studies of safety cultures in the public sector. We will address this research gap by exploring how organizational and professional cultures influence on collaboration, action capacity and risk communication between public actors at different societal levels.

In addition to underplaying the role of different organizational and societal levels of the risk governance chain, safety culture research has a clear tendency toward studying culture only as an intra-organizational phenomenon. While there are some publications dealing with organizational interfaces (e.g. Collinson 1999; Antonsen 2009c), this should be considered a weakness of the existing research in general. When related to societal safety, a number of organizations at different levels will be involved. Thus, the cultural dynamics *between* groups becomes all the more important. "Cultural dynamics" here refers to the interaction between people with different backgrounds, frames of reference, interests and understandings of risk.

As suggested by Antonsen (2009a) in the case of safety culture, there is a still a research gap related to how safety-related cultural traits are formed and changed. For instance, the role of disasters in shaping future culture development has not been studied empirically. The same can be said of the way regulation and government supervision influence on cultures in the public sector. These are all research gaps that will be addressed by the NEXUS project.

Risk governance

In his seminal contribution to safety science, Rasmussen (1997) describes how safety is the result of actions, collaboration and communication that spans across many societal levels, such as politicians, regulators, public agencies, private companies, management and operative staff. The NEXUS project takes this multi-level perspective as its starting point. The emphasis is on societal safety, defined as "society's ability to maintain critical social functions, to protect the life and health of the citizens and to meet the citizens' basic requirements in a variety of stress situations" (Olsen et al. 2007: 69).

Rasmussen's perspective is further developed in the risk governance framework (Renn, 2008) depicted in figure 1.

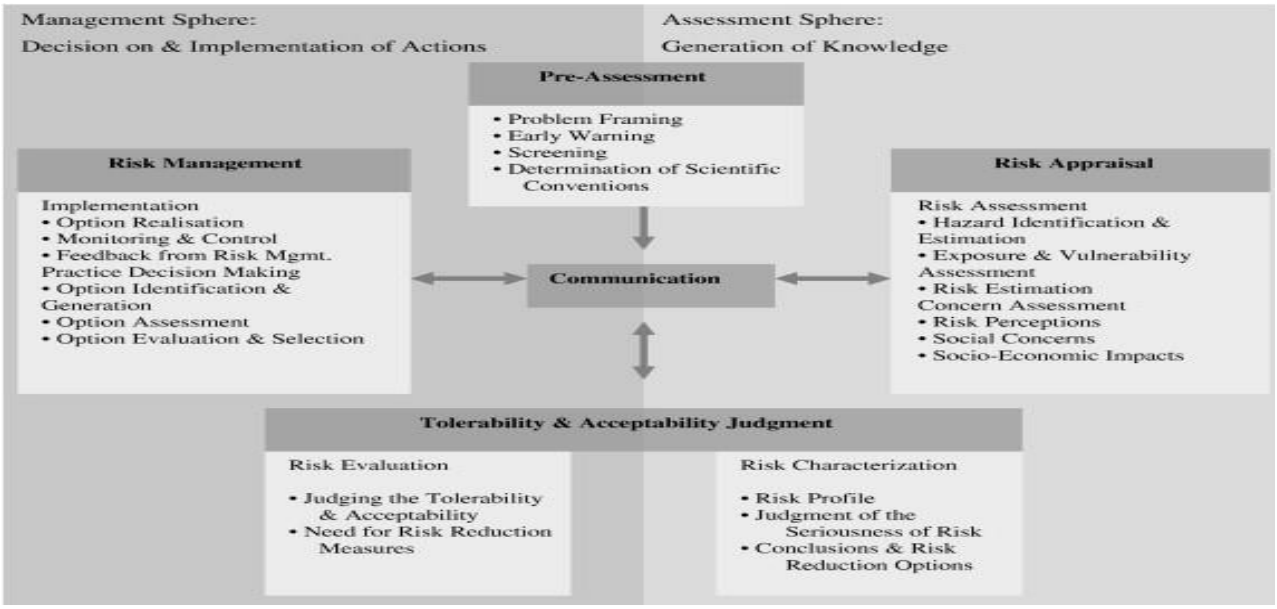

Figure 1: The risk governance framework

At the most general level, risk governance consists of the generation of knowledge (the right side of the figure) and decisions on and implementation of actions (left side). The findings of the 22.07 commission point to fundamental weaknesses related to both these sides of risk governance. Moreover, culture is highlighted as a key aspect in both respects.

Cultural aspects influence on risk governance at all four stages of the process: 1) in the pre-assessment phase by constituting a set of cognitive frames that sets the limits to our imagination as to what can happen, 2) in the assessment phase by influencing what is regarded valid information and valid analysis methods to assess risk, 3) in the risk evaluation phase as the socially constructed conventions regarding what is considered safe enough, 4) in the risk management phase by providing the unwritten rules guiding which measures are selected and how measures are implemented. In addition, the communication between the actors performing these activities (the center of the model) is likely to be influenced by cultural dynamics. As described by Fischhoff et al. (2011), the potential goals of risk communication includes actors sharing information, changing beliefs, attitudes and understanding and ultimately to actors changing behavior.

When it comes to societal safety, these processes will involve multiple public agencies which, in turn, may introduce considerable organizational and cultural complexity into risk communication. The role of organizational culture can in this respect both be a problem and a solution. Culture is at the same time a source of integration which makes collaboration, coordination and learning possible, and a source of differentiation which, if not properly addressed, can constitute a major risk governance deficit.

Research gaps related to risk governance

Risk governance perspectives and research on public sector (re)organization has provided useful conceptualizations of how the public sector in different countries "work" related to societal safety (e.g. Renn 2008; Christensen & Lægreid 2007). How the general processes of risk governance are actually carried out in real life is a question that has not been studied in-depth within the research on societal safety. There is still a lack of empirical accounts of how coordination, collaboration and action capacity is maintained at a micro level. This must be considered a shortcoming, as there is a lot of research indicating that plans and procedures usually have to be adapted when they are to be used in situated action (Suchman 1987; Almklov & Antonsen, in press).

This translates into a lack of empirical research into the risk governance deficits (IRGC, 2009) that may hinder the ability to learn from disasters such as 22.07. For instance, there is too little knowledge on the role of new public management (NPM) in either facilitating or hindering the communication, action capacity or collaboration between public agencies. There is a lack of research into the translation of risk assessments and evaluations into sound risk management. After

all, detecting and understanding risks have little value until turned into preventive measures. Research on safety management and safety culture has seriously underestimated the role of action capacity, e.g. the ability to identify appropriate preventive measures and sufficiently implement these in the organizations involved.

When it comes to societal safety, both the "seeds of disaster and roots of response" (Auerswald et al, 2006) straddle institutional and organizational boundaries. A key challenge of our project is to study how networks of involved actors communicate on risk and importantly to what extent this communication leads to action. According to Christensen and Lægreid (2007), the "pillarization" of the public sector runs the risk of narrowing the interests and mandates of public actors according to regimes of accountability and incentives to pursue narrow goals. As such, understanding the landscape of intra-institutional communication and collaboration in risk management is a matter of understanding interfaces between public actors acting according to the logics of New Public Management (Almklov et al, 2012). Taking responsibility across sectors and organizations is hard, true collaboration likewise. Importantly, the exchange of information, collaboration and communication between public agencies is not only a matter of rules, regulations and resources. This was thoroughly stressed by Prime Minister Stoltenberg in his account of the 22.07 terror in Norwegian Parliament: *"The problem is not that plans did not exist, but that the plans were not put into action. The problem is not that emergency exercises are not held, but that the ability to learn from them is insufficient. The problem is not first and foremost a lack of resources laws or organizing, but cultures, attitudes toward emergency preparedness and the ability to cooperate"*. It is the goal of the NEXUS project to explore the influence of these cultures on societal safety.

2.2. Approaches, hypotheses and choice of method

The NEXUS project is based on a definition of safety culture as consisting of "the frames of reference through which information, symbols and behaviour are interpreted and the conventions for behaviour, interaction and communication (Antonsen, 2009a: 4). This is a definition that fits very well with the Gjørv Commission's report. The first part of the definition (frames of reference) has to do with the ability to recognize and understand risks. The second part (conventions) has to do with the collaboration and risk communication. The second part of the definition can also be related to action capacity, as the conventions for action will include the norms for implementation and follow-up of improvement measures (whether it is regarded as acceptable or unacceptable to act according to plans and procedures). Furthermore, the project is based on the view that organizational cultures should be analyzed and understood in close relation to both organizational structures, and the technology used or developed in the organization's activity. This relationship is illustrated in the following figure:

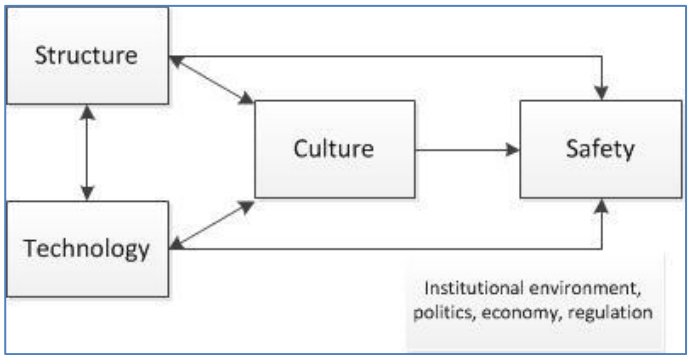

Figure 2: The relationship between structure, culture, technology and safety.

We analyze how organizational cultures and cultural dynamics can influence societal safety and preparedness in light of the interplay of the concepts represented in Figure 2. This model should, however, not be seen as an intra-organizational model only. We will study the collaboration, action capacity and risk communication between groups, both vertically (between actors on different societal levels) and horizontally (between multiple actors at the same societal level).

As was introduced as a research gap related to risk governance, there is a need to study how real-life actors actually contribute to the sharing of information, interpretation of risks and the implementation of plans. Collaboration, communication and the implementation of changes should not be seen as some mystical properties of organizations. They consist of action and practice – actors engaging other actors with the intent of gaining and sharing knowledge about risk-related issues. We agree with Barley and Kunda (2001:90) who, in a discussion of organizational theory, argued that 'the dearth of data on what people actually do − the skills, knowledge, and practices that comprise their routine work − leaves us with increasingly anachronistic theories and outdated images of work and how it is organized.' Research on societal safety is lacking analyses addressing empirically and theoretically how risk management work on a practical level. One important issue in this respect is to investigate how coordinative efforts, like the ones described by McConnell and Drennan (2006), are solved in practice. Also, by drawing theoretically on micro-sociological studies of work we believe that it might contribute to "bringing work back in" into theory. (Barley and Kunda, 2001; see also Almklov and Antonsen, in press). This means that our approach can be best described as practice-based. It is an exploratory effort to understand how key actors communicate, collaborate and prioritize in their everyday settings, and how this contributes to the ability to deal with risk. This activity is likely to be influenced by professional and organizational cultures, both within each agency and in the interaction between different agencies.

We regard safety culture as one of the key "storages" for lessons learnt, as well as one of the key mechanisms for transferring these lessons to new members of the organization. Learning cannot be reduced to simply making a piece of information available to somebody. While this is a necessary condition for learning, it is by no means a sufficient condition. For learning to take place, someone needs to pick up on the message sent, internalize it and "translate" it to their context. Furthermore, sometimes problems and lessons learnt cannot be dealt with within the boundaries of a single organization, but are rather related to organizational interfaces. In these instances, learning is unlikely to take place unless the stakeholders involved engage in some form of dialogue. This calls for a broad empirical perspective and the inclusion of the views of different stakeholders in.

Research questions and empirical approach

The general problem to be addressed is: To which extent and in what way have the general lessons from the 22.07 terror acts been translated into concrete measures that increase the level of societal safety and emergency preparedness? This can be broken down into the following questions:

1) How has public agencies at different levels translated the lessons from the 22.07 commission into concrete measures? Are fundamental challenges addressed, or are symbolic actions prioritized?
2) How has these measures (if any) been implemented? Which agencies or actors are perceived as the driving forces in making sure measures are actually implemented?
3) How does cultural traits and cultural dynamics influence on the exchange of information, coordination, collaboration between different actors involved in creating and maintaining societal safety?
4) Have the lessons from 22.07 involved cultural changes in public agencies involved in creating societal safety and emergency preparedness.
5) Do the actors involved have a differentiated or an integrated understanding of risk?
6) What are the framework conditions (e.g. incentive structures, division of labour and responsibility, New Public Management) facilitating or hindering collaboration, action capacity and risk communication between the actors involved in creating societal safety and emergency preparedness?
7) What are the most important measures that can be suggested to improve exchange of information, coordination and collaboration between different public agencies?

These research questions will be answered by a broad interview study which consists of 5 interrelated case studies. Approximately 150 interviews will be performed. The cases have been selected strategically to be able to shed light on the level of communication, collaboration and action capacity both centrally and locally. On the basis of this broad criterion, we have selected the following cases:

1. County Emergency Preparedness Managers (CEPMs) of the different Norwegian counties constitute an entry point for studying the way the lessons from the 22.07 disaster have been translated into improvement measures that improve the collaboration, coordination and information exchange between relevant public and private actors. The CEPMs hold important functions as "brokers" between different stakeholders of societal safety, both by creating the nexuses where local stakeholders meet, and the exercises where our level of preparedness are tested. We will start out our assessment with interviews with all 19 CEPMs. Additional interviews with County Governors will be considered. The CEPM executive committee has agreed to facilitate the project.

2. The Ministry of Justice and Public Security. The Ministry has approximately 400 employees divided between nine departments, the Minister's office and the Press Office. Among the key responsibilities of the Ministry, is the ensuring of the security of society and individual citizens. The Ministry is responsible for the overall coordination of emergency preparedness and crisis management. This is among the key roles in the organization of societal safety in Norway and is likely to play an important role in the learning processes in the aftermath of disasters like 22.07. Of particular interest to the topic of the NEXUS project is the Department of Rescue and Emergency Planning, and the Department of Crisis Management and Security. We wish to conduct approximately 30 interviews the Ministry of Justice and Public Security.

3. The Norwegian Directorate for Civil Protection (DSB) is organized under the Department of Rescue and Emergency Planning. DSB has a wide area of responsibilities. The overall purpose of DSB is to have oversight of risks and dangers in society. DSB is to be a driving force in preventing accidents, crisis and other undesired events, and to contribute to effective emergency preparedness and crisis management.[2] DSB perform supervision of all the Government Departments related to national, regional and local preparedness and emergency planning. This makes DSB an important actor in helping other agencies and private organizations to identify, understand and mitigate risk, and also to address the risks that lie at the interfaces between different organizations. The department of analysis and national preparedness is of particular importance here, but other parts of DSB may also be included in the study. We will conduct approximately 30 interviews in DSB.

4. The Police Directorate. The police are a key operative unit in all major crises. The Police Directorate have been among the key target groups of the measures described by the Gjørv Commission. In a crisis situation the Police Directorate coordinates between different districts and special departments. The Police districts (PDs) are the tactical/executing level. The police districts are responsible for the local preparedness and the coordination with other emergency agencies, the Municipality, The Armed Forces, business and voluntarily organizations as well as the population.

We wish to conduct interviews in two rather different districts, that of Sør-Trøndelag and Western Finnmark. Sør-Trøndelag PD covers 23 municipalities including the two cities Trondheim and Røros. There are two police stations in Trondheim and in addition 19 local police offices. The district services a population of 303.000 inhabitants covering a geographical area of 18 855 km². Western Finnmark PD consists of 8 local police offices in addition to an administrative unit, the Police Security Services (PST), the Prosecutor's office and a department dedicated to reindeer-related issues. The district covers around 44 000 citizens distributed over an area of nearly 25 000 km2. The two districts are chosen to reflect the great variation that exists in the contexts of emergency preparation and crisis management. Both Police districts have agreed to participate in the study. We will conduct approximately 20 interviews in each PD, and 10 in the Police Directorate centrally.

[2] http://dsb.no/en/toppmeny/Om-DSB/Visjon-og-virksomhetside/

5. Two Norwegian Municipalities. In order to follow the risk management chain to the sharp end within the public sector, we will study two Municipalities, one in Sør-Trøndelag and one in Western Finnmark. Here we will recruit informants among emergency preparedness personnel, municipal administrations and politicians in key positions. The two municipalities will be chosen after the interviews with the CEPMs in order to be able to make a more informed case selection. It will be an aim to include one urban and one rural municipality. Approximately 25 interviews will be performed in each municipality.

2.3. The project plan, project management, organisation and cooperation

The project will be conducted in three main phases over a period of three and a half years. In a preparatory phase, a literature study will be conducted, focusing on the way major disasters have been translated into improvement measures, and how these may be related to safety culture. This phase also includes detailed planning of the case studies and the production of interview guides. Phase two consists of the project's empirical work, organized as three work packages. Each work package will have a dedicated person responsible for planning and preparation. The projects core team will, however, be involved in interviews in all WPs. Phase three is devoted to disseminating the results of the study. Scientific publication will be addressed specifically in this phase, but this will also be a continuous activity throughout the project period. The project will be rounded off with a closing seminar in which public actors, researchers, media etc. will be invited. A timetable including the different activities is illustrated in Table 1:

		2014				2015				2016				2017	
Phase	**Main activities**	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
1	Start-up activities	■													
	Literature study	■	■												
	Opening seminar, International collaboration group			■											
2	WP1 interview study, CEPMs			■											
	WP1 Analysis and memo				■										
	WP2 Interview study, public agencies					■									
	WP2 Analysis and memo					■	■								
	WP3 Interview study, police directorate						■	■							
	WP3 Analysis and memo							■	■						
	Half-way seminar, international Collaboration group								■						
	Comparative analysis									■	■				
3	Compiling of final report											■	■		
	Scientific publication					■	■	■	■	■	■	■	■	■	■
	Closing seminar, international Collaboration group												■		
	Closing conference for dissemination of results.													■	

Table 1: Project plan

The project will be managed by associate professor Eirik Albrechtsen from the HSE group at the department of Industrial Economics and Technology Management (IØT) at NTNU, in close collaboration Stian Antonsen. Antonsen holds a dual position as associate professor II at IØT and technical director at Safetec Nordic. Also from IØT, professor emeritus Jan Hovden will function as a project advisor for the project. The project partners are SINTEF Safety, NTNU Social Research – Studio Apertura and Safetec Nordic. From these institutions, Dr. Stig Ole Johnsen, Dr. Petter Almklov, Dr. Tonje Osmundsen and discipline leader Grete Aastorp will be the key participants. This is a multidisciplinary team with long-lasting and varied experience. All project partners will participated in all phases of the project.

The NEXUS project will have extensive international collaboration with esteemed scholars on safety culture, societal safety and emergency preparedness. We have established an international collaboration group consisting of Professor emeritus Jan Hovden at NTNU, Dr. Teemu Reiman of VTT, Finland, and Dr. Carl Rollenhagen of the KTH Royal Institute of Technology, Sweden, Dr. Leire Labaka Zubieta and professor Jose Maria Sarriegi at the University of Navarra, Spain.

This group will meet at three different seminars throughout the project. The aim is to utilize international research expertise, promote international network-building, provide grounds for comparative analysis and scientific publication, as well as the continuation of the project into a project on risk governance and emergency preparedness within the EU's Horizon 2020 program

3. Key perspectives and compliance with strategic documents

3.1. Compliance with strategic documents

Societal safety, risk governance and safety management constitute the strategic core of all the organizations participating in the project.

3.2. Relevance and benefit to society

The project will generate knowledge and improvement measures related to emergency preparedness and crisis management at both a regional and national level. This will provide important input to the way the lessons from the 22.07 terror attacks are translated into improved preparedness for and handling of future emergencies.

3.3. Environmental impact

The project is not expected to have any negative environmental consequences.

3.4. Ethical perspectives

The project will follow established conventions with regard to protecting the interests of individuals and groups participating in the study. All project partners have implemented routines regarding the storage of personal data which will be strictly adhered to. There are, however some challenges when it comes to general research practice, reliability and validity. The project concerns highly politicized questions related to responsibilities, collaboration and coordination in the public sector. The informants' statements regarding both problems and solutions may be biased by political views and personal/organizational interests. The interpretation and analysis of data could also be influenced by the researchers' own political views and other biases. This need to be addressed by 1) recognizing the challenge, 2) always validating the views of one informant, organization or stakeholder in subsequent interviews, 3) documenting the analysis in such a way that it is possible for other researchers to consider the link between data, inferences and conclusions.

3.5. Gender issues (Recruitment of women, gender balance and gender perspectives)

The core team consists of 4 men and 2 women. The team could thus be more gender-balanced. While gender is always an issue in organizational life, gender perspectives will not be an explicit focus in the project. The recruitment of students will be gender-balanced as far as this is possible.

4. Dissemination and communication of results

4.1 Dissemination plan

The results from the project will be published in five articles in peer reviewed journals, such as Public administration, Safety Science and Journal of Contingencies and Crisis Management. We will also publish a book (in Norwegian) which utilizes knowledge generated in the SAMRISK 1 and SAMRISK 2 programmes. Popular scientific publication will be done in the form of newspaper chronicles and a closing conference where all participants/informants, media and other researchers will be invited. The project has an explicit aim of being a visible driving force in the public debate around emergency preparedness in Norway.

4.2 Communication with users

The project is based on dialogue with actors that hold key roles in the maintaining and improvement of societal safety. The closing conference will be an important means of communicating results,

while at the same time challenging selected users (e.g. county governors, politicians) to present their thoughts on the problems and solutions of societal safety in Norway.

5. References

Almklov, P., Antonsen, S. & Fenstad, J. (2012). Organizational Challenges Regarding Risk Management in Critical Infrastructures. *In:* Hokstad, P., Utne, I. B. & J., V. (eds.) *Risk and Interdependencies in Critical Infrastructures.* London: Springer.

Almklov, P. & Antonsen, S. (in press). Making work invisible: New Public management and operational work in critical infrastructure sectors. *Public Administration*.

Antonsen, S. (2009a). *Safety culture: theory, method and improvement,* Farnham, Ashgate.

Antonsen, S. (2009b). Safety culture and the issue of power. *Safety Science,* 47**,** 183-191

Antonsen, S. (2009c). The relationship between culture and safety on offshore supply vessels. *Safety Science,* 47**,** 1118-1128.

Auerswald, P. E., Branscomb, L. M., La Porte, T. M. & Michel-Kerjan, E. O. (2006). *Seeds of Disaster, Roots of Response: How Private Action Can Reduce Public Vulnerability,* Cambridge, Cambridge University Press.

Barley, S. R. & Kunda, G. (2001). Bringing Work Back In. *Organization Science,* 12**,** 76-95.

Boin, A., 't Hart, P-. Stern, E. & Sundelius, B (2007): *The Politics of Crisis Management: Public Leadership under Pressure.* Cambridge University Press, New York, 2005.

Brunsson, N. (2000). *The Irrational Organization,* Bergen, Fagbokforlaget.

Christensen, T. & Lægreid, P. (2007). The Whole of Government Approach to Public Sector Reform. *Public Administration Review,* 67**,** 1059-1066.

Clarke, S. (2000). Safety culture: under-specified and overrated? *International Journal of Management Reviews,* 2**,** 65-90.

Collinson, D. L. (1999). 'Surviving the Rigs: Safety and Surveillance on North Sea Oil Installations. *Organization Studies,* 20**,** 579-600.

Duijm, N. J. & Goossens, L. (2006). Quantifying the influence of safety management on the reliability of safety barriers. *Journal of Hazardous Materials,* 130**,** 284-292.

Fischhoff, B., Brewer, N. T. & Downs, J. S. (2011). *Communicating Risks and Benefits: An Evidence-Based User's Guide*, Food and Drug Administraion (FDA), US Department of Health and Human Services.

Gherardi, S. & Nicolini, D. (2000). The organizational Learning of Safety in Communities of Practise. *Journal of Management Inquiry,* 9**,** 7-18.

Gherardi, S., Nicolini, D. & Odella, F. (1998). Toward a Social Understanding of How People Learn in Organizations. *Management Learning,* 29**,** 273-297.

Hollnagel, E., Woods, D. D. & Leveson, N. (2006). *Resilience Engineering - Concepts and precepts,* Aldershot, Ashgate.

IRGC (2009). *Risk Governance Deficits. An analysis and illustration of the most common deficits in risk governance.,* Geneva, International Risk Governance Council.

Kongsvik, T., Antonsen, S. & Størkersen, K. V. (2013). The relationship between regulation, safety management systems and safety culture. . *The 2013 SRAE conference.* Trondheim.

Mcconnell, A. & Drennan, L. (2006). Mission Impossible? Planning and Preparing for Crisis. *Journal of Contingencies and Crisis Management,* 14**,** 59-70.

Mitchison, N. & Papadakis, G. A. (1999). Safety management systems under Seveso II: Implementation and assessment. *Journal of Loss Prevention in the Process Industries,* 12**,** 43-51.

NOU 14: 2012. *Rapport fra 22. juli-kommisjonen*. Oslo: Departementenes servicesenter - informasjonsforvaltning.

Olsen, O. E., Kruke, B. I. & Hovden, J. 2007. Societal Safety: Concept, Borders and Dilemmas. *Journal of Contingencies and Crisis Management*, 15, 69-79.

Pidgeon, N. (1997). The Limits to Safety? Culture, Politics, Learning and Man-Made Disasters. *Journal of Contingencies and Crisis Management,* 5**,** 1-14.

Rasmussen, J. (1997). Risk management in a dynamic society: A modelling problem. *Safety Science,* 27**,** 183-213.

Renn, O. (2008). *Risk governance: coping with uncertainty in a complex world,* London, Earthscan.

Suchman, L.A. 1987. Plans and Situated Actions: *The Problem of Human–Machine Communication*. Cambridge: Cambridge University Press.

Taleb, N. N. (2007). *The black swan: the impact of the highly improbable,* London, Allen Lane.

Turner, B. (1978). *Man-Made Disasters,* London, Wykenham Science Press.

Van Maanen, J. & Barley, S. R. (1985). Cultural Organization: Fragments of a Theory. *Organizational Culture.* Newbury Park, CA: Sage Publications.

Zhang, H., Wiegmann, D. A., Von Thaden, T. L., Sharma, G. & Mitchell , A. A. (2002). Safety culture: a concept in chaos? *Proceedings of the 46th Annual Meeting of the Human Factors and Ergonomics Society. Santa Monica, Human Factors and Ergonomics Society*.

Zohar, D. (1980). Safety Climate in Industrial Organizations: Theoretical and Applied Implications. *Journal of Applied Psychology,* 65**,** 96-102.