

# Public Security in Germany 2030: Challenges for policy makers

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## ABSTRACT

This paper presents results from a two-round Expert-Delphi ( $N_1=227$ ,  $N_2=126$ ), realized in 2014, which focuses on the following research question: *What are the most relevant developments affecting public security in Germany until 2030?*

Theoretically the survey is based on a conceptual framework that includes assumptions on calculating the probable occurrence of risks, the relevance of megatrends and the implications of both on public security. Preliminary results show the relevance of the increasing dependency on Information and Communication Technologies (ICT), increasing exposure of critical infrastructures, the global mobility of men and goods and the widening gap

between rich and poor as relevant for public security in Germany. Furthermore the potential impact of risks like ICT-crime, extreme weather events and pandemics are rated high, while their expected probability of occurrence differs from *medium* to *high*.

## Keywords

Security, Delphi, Megatrends, Risks, Germany

## INTRODUCTION

Within the last years a broad discussion about “new” risks, dangers and vulnerabilities arose in Germany. The combination of new threats like physical or cyber terrorist attacks, pandemics and extreme weather events on the one hand and complex, nearly uncontrollable interdependencies of critical infrastructures with a wide range of possible outcomes in time and possibly affected areas on the other hand were now discussed as ‘systemic risks’ (Renn, Schweizer, Dreyer and Klinke 2007; Renn 2014). These developments – especially for Germany – have widely been discussed in scientific literature (e.g. Daase 2010; Gerhold and Schiller 2012; Lange, Ohly and Reichertz 2009; Thoma, Drees and Leismann, 2010; Zoche, Kaufmann and Haverkamp 2011) as well as in political publications (Reichenbach, Wolff, Göbel and Stokar von Neuform 2010).

Nevertheless most of the research and literature does not discuss future developments in the sense of a systematic approach by using foresight methodologies (ESRIF 2009). Only within the last few years the topic “security foresight” emerges on an European level, e.g. discussed by Burgess (2014). This contribution addresses this perspective by focusing on public security in Germany in 2030. In the following the methodological approach of an Online-Delphi, conducted in Germany in 2014, will be presented and first results will be shown. The key question for this study is: “What are the most relevant developments affecting public security in Germany until 2030?”

## THEORETICAL APPROACH

Theoretically two perspectives on security and risk form the conceptual framework here. Firstly, we know from risk research, that risk – in its simplest understanding is understood as the probability that something occurs and the potential negative outcome of what happens to something or someone (Bechmann 1993; Renn et al. 2007). Even if this can be criticized because risks aren’t objectively determinable and also depend on qualitative criteria like risk perception and social construction processes, this understanding is useful for security research due to the fact that risks cannot be researched in their full complexity. If the aim is to achieve an overview on potential risks a society is facing, it is necessary to reduce their complexity to a measurable grade. Therefore, in this case the understanding of risks as calculable by multiplying probability and potential impact is accepted, knowing about the limitations of these calculations (see *conclusions*).

Secondly, megatrends are in the focus of this study. While risks in the above stated understanding describe concrete and unique events, megatrends are large social, economic, political and technological changes that influence us for some time – between ten years or longer (Naisbitt 1982, p. xxiii). In contrast to risks, trends and drivers are continuous forces that influence security in a more indirect way and cannot be observed as single or even a series of events. For this study seven different megatrends that might be relevant for security are derived from literature (ESRIF 2009; ETTIS 2013; FORESEC 2009; FOCUS 2012; Siemens 2004). For this study it was more important that there is an expected link between

megatrends and security, than to focus on megatrends that are unlikely connected to security in Germany (e.g. an increasing power of China’s and India’s economy). As the number of items was limited in the questionnaire because of rising drop-out rates, the extraction followed a two-step process: First, all 36 trends that were found in the stated literature were checked on duplication and then aggregated on the highest possible level. Second a pretest was realized and selected experts were asked to decide which trends are mostly relevant for the aimed research question.

The questioned risks<sup>1</sup> and megatrends are expected to take influence on public security in the next 15 years in the sense that public security is defined as to grant protection against risks and threats to the population (Reichenbach et al. 2008).

## METHODOLOGY

The study was accomplished as an Online-Delphi. Delphis are used to question experts anonymously in two or more iterative rounds. The idea behind this process is the ability of individuals to participate in a group communication process asynchronously at times and places (Linstone and Turoff 2010, p. 1712). Within this study the main aspect on the second round was to validate the first round. The questionnaire therefore contains 59 items to answer for every expert anonymously two times. Every item has to be rated quantitatively on two different scales, depending on the asked questions. Additionally the experts were given the possibility to comment their ratings by qualitative statements in open questions to give reasons for and comments on their answers. This should help to understand their point of views (Zipfinger 2007, p. 103).

In the second round the results from the first round were presented to the experts (by graphics that show the mean (M) and standard deviation (SD)) so that they can rethink their judgments (Häder 2002, Steinmüller 1997). The questionnaire was divided into four main parts. Part one asks for the profession and the experience of the expert, part two focuses on security culture, part three asks

<sup>1</sup> In social sciences we found a broad discussion on the definition of risks, threats and dangers (e.g. Bechmann 1993; Buergin 1999; Taylor-Gooby and Zinn 2005; Luhmann 2003) that cannot be replied within this article. Here and in the study we use the term “risks”, because it is the most common term for the addressed experts and stakeholders.

about the relevance of megatrends for public security and part four contains risks to be judged by probability and impact. The results presented here focus on part one, three and four. Part two is not yet analyzed.

The participants were recruited from a database that was generated over several years by networking and research at the Research Forum of Public Safety and Security at Freie Universität Berlin, Germany. 870 experts were invited to take part in the online survey. All experts are checked by the authors concerning their general ability to be an expert for security questions from different disciplinary and practical perspectives. 255 experts from various disciplines took part in the first round, which is equivalent to a return rate of 29%. In a next step experts who stated their competence level in the thematic area of 'security' only as "low" were excluded from the survey. Finally, 227 experts stated that their own competence was rather high or very high on the topic of the survey. The experts that took part came from the following groups of professions: politics (66), social sciences (60), nature and engineering sciences (34), economy (36) and end-users (31). The average experience of the experts in round one was nearly 16 years ( $M=15,7$ ;  $SD=11$ ). These 227 experts were invited to take part in the second round as well. As only these experts were invited to a second round, the experience in years wasn't evaluated again. But it can be assumed, that the average in experience is nearby the given value of round one.

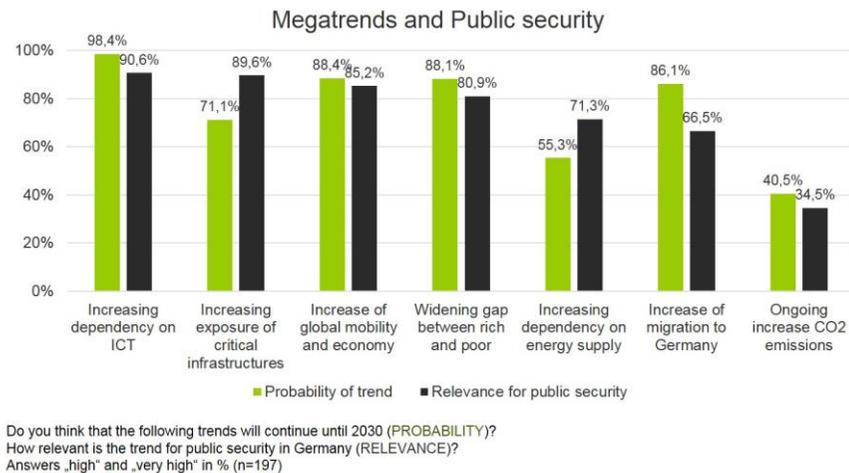
All experts that do not answer the second round were reminded two times to do so. In sum, in the second round 126 experts took part which is equivalent to a return rate of 56% in regard to the invited experts to the second round and of 15% in regard to all invited experts. In the second round, only few significant changes in the quantitative data with limited effect strength could be found. SD decreases in the second round to a small extend continuously at most items, which is an expected effect that stands for more consistent results (Häder 2002). Therefore the following results could be understood as robust and proved by the two steps so that no more steps were necessary. As the data basis is a lot stronger (227 to 126 experts) the presented results in this contribution mainly focus on the first round of the Delphi; only if significant changes were found between the rounds, these will be reported here. The survey period of the first round was 13.06.2014 to 03.07.2014, the period of the second round 31.07.2014 to 02.09.2014.

## PRELIMINARY RESULTS

### Megatrends and Public Security in Germany 2030

Figure 1 shows the percentage of the experts who think that the named megatrends will continue until 2030. The *increasing dependency on Information and Communication Technologies (ICT)*, the *Increase of global mobility and economy*, the *Widening gap between rich and poor*, the *Increasing exposure of critical infrastructures* and the *Increase of migration to Germany* were confirmed by the experts to be continuous changes that influence our society for a longer time. Only the *increasing dependency on energy supply* and the *ongoing increase of CO<sub>2</sub> emissions* were not rated that high. Secondly, figure 1 shows that over 80% of the experts rate the *Increasing dependency on ICT* and the correlated *Increasing exposure of critical infrastructure*, the *Global mobility of men and goods* and the *Widening gap between rich and poor* as relevant trends for public security in Germany.

Comparing both rounds of the Delphi, in two cases significant changes in a more or less moderate strength could be found. First, the percentage of experts that rate the relevance of an *Increasing dependency on Information and Communication Technologies (ICT)* high or very high rises significantly from 90,6% to 95,8%. Second, significant changes could be found concerning the *Increasing global mobility and economy*. The percentage of experts that rate the probability of this development to occur in 2030 as high or very high rises from 88,4% to 95,0% and the expected relevance for public security rises from 85,2% to 92,8%. One explanation for the latter might be the upcoming Ebola virus epidemic in summer 2014. Between the two rounds of the Delphi first deaths were reported in media.



**Figure 1: Megatrends and Public Security (source: authors)**

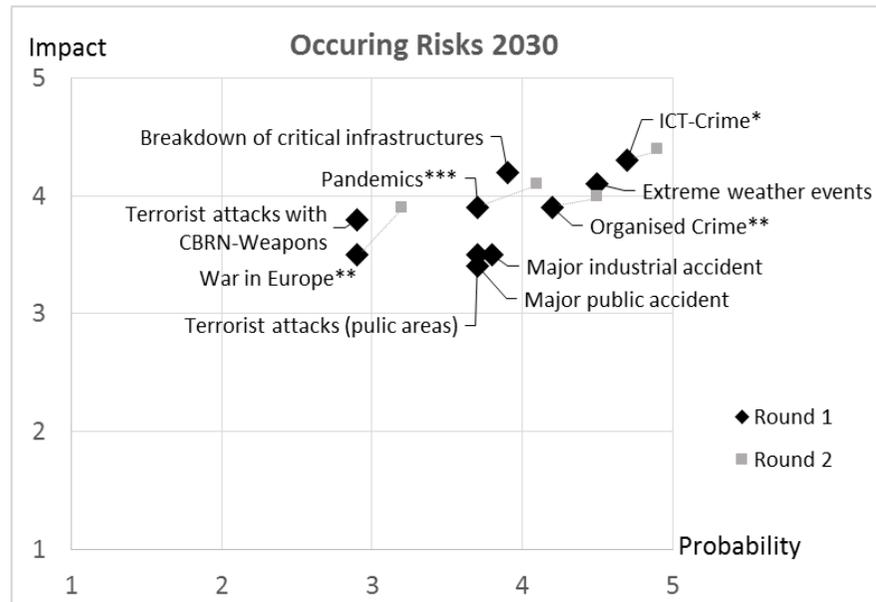
In order to generate a better understanding of the stated assessments, the experts were additionally asked to give qualitative explanations why they think that these trends affect public security in Germany. In sum, more than 850 explanations were made. As the qualitative analysis is still in progress while submitting this paper, only an idea of what these statements were like can be given here:

- High dependency on ICT: More interconnected networks are more complex and less easy to control. Espionage and surveillance will be easier in future.
- Global mobility: Some experts expect a rise of international crime and terrorism, others that diseases will spread more easily or that the security of supply chains will be more challenging.
- Exposure of critical infrastructures: Complexity, interdependencies and possible cascading effects are the dominating explanations here because they lead to more vulnerability.

- The gap between rich and poor might lead to social conflicts, as well as to inequalities and social exclusion.
- Regarding to the increasing dependency on energy supply the experts state a relatively low probability which inter alia was explained by the “Energiewende” (changes in German energy policy towards an increase of the usage of renewable energies) that will lead to more independence from conventional resources. Nevertheless this is relevant for public security because the dependency on energy in general is considered problematic.
- Concerning migration the experts announce positive and negative effects: for example more workforce but also more cultural conflicts.
- Concerning the ongoing increase of CO<sub>2</sub> emissions the experts make remarks that this is not the only relevant factor and that climate change has taken into account in general. In addition, several experts argue that the energy policy in Germany will lead to the use of more renewable energies.

### Occuring Risks 2030

When dealing with security challenges, governments will usually make assessments about the probability of a particular event happening and of the impact such an event would have on national security (Bundesamt für Bevölkerungsschutz und Katastrophenhilfe 2010). Of primary concern are those risks that have both a high probability and a high impact followed by those with high impact but low probability.



Please estimate the probability and the expected damage of the following risks until 2030 (N=197).  
 Scale "Probability": 1=very low probability, 2=low probability, 3=neither agree nor disagree, 4=high probability, 5=very high probability.  
 Scale "Impact": 1=very low impact, 2=low impact, 3=neither agree nor disagree, 4=high impact, 5=very high impact.  
 \*= $p < 0,05$ , \*\*= $p < 0,01$ , \*\*\*= $p > 0,001$

**Figure 2: Occuring Risks 2030 (source: author)**

Figure 2 shows the means of the estimated probability of risks to occur and the potential impact expected by the experts. Means of round 2 were displayed when they differ from those of round 1 significantly. As can be seen, there is no undisputed and unifying number one risk to Germany. While the expected impact on the German society was rated between  $M=3,4$  (*Major public accident*) and  $M=4,3$  (*ICT-Crime*) the range of the expected probability lies between  $M=2,9$  (*War in Europe* and *Terrorist attacks with CBRN-Weapons*) and  $M=4,7$  (*ICT-Crime*). Only the probability of *terrorist attacks with Chemical, Biological, Radiological and Nuclear (CBRN) weapons* and *War in Europe* were rated lower

than the other risks. On the other hand, risks like *ICT-Crimes* and *Extreme weather events* are rated with the highest probability and impact.

Significant differences between round 1 and 2 were found for *Pandemics*, *ICT-Crime*, *Organized Crime* and *War in Europe*. Even when these differences are moderate these topics show an increase of probability and in a minor way of the expected impact. Possible triggers could be events like the Ukrainian crisis and the Ebola virus in Western Africa that affect the judgments of the experts.

In addition to the numerical ratings, the experts were asked for qualitative explanations again. Due to the state of the analysis only some impressions of more than 180 statements will be shown here:

- Climate change is given several times as an important explanation for the high ratings on *Extreme weather events* (because more extreme events will occur) and also concerning *Pandemics* (because pathogens have better chances to survive).
- The high relevance of *ICT-Crime* is explained by the largely interconnected and only hardly controllable networks on the one hand. On the other larger economic damages are expected by the experts in future.
- The interconnections and the complexity of the critical infrastructures and expected cascade effects explain the estimations of the experts of *Breakdown of critical infrastructures*.
- *Major industrial and public accidents* were expected to be relevant because these accidents are likely every time and could not be avoided anyhow.
- *Organized crime* was expected to occur serious damages regarding the direct economic damage on the one hand, and a collective erosion of society's value system on the other hand.
- One reason why *Terrorist attacks with CBRN-weapons* are rated more unlikely than the other risks is, that it is difficult for potential attackers to gain access to CBRN-weapon relevant material.

- The topic *War in Europe* was discussed more broadly because the Crimean crisis influences the ratings, even if some experts expect European law to be able to protect the EU from war.

## CONCLUSIONS

Within the study the focus lies on the question whether already well-known risks and trends are still relevant in 2030. This also means a limitation of the results, because new and unknown risks and trends remain out of scope here. But for the questioned risks and megatrends we can state, that the preliminary results already show that well known trends like *Mobility*, *Increasing dependency on ICT* and *Vulnerability of critical infrastructures* as well as a *Widening gap between poor and rich* will still be relevant in 2030 and will affect public security in some way. All risks that were discussed in this paper will still have the potential of large damages to the German society, even if the probability of their occurrence might differ. Nevertheless, talking about any hierarchy of risks does not make sense on basis of these findings. This also implicates that only limited recommendations can be given for policy makers here. The important thing in these results is, that if we want to shape a secure future for the German society, these trends and risks need to be faced in sum. Most known risks and trends will still be relevant in 2030 and others, not yet discussed developments will occur.

Furthermore this study has its methodological and theoretical limitations. What we can find in the presented figures is only an extract of what can be understood by public security. The way megatrends and risks were operationalized in this study means to reduce the complexity of the reality to a very low level. Nevertheless, the results give us a brief impression of what the relevant topics of public security in Germany might be in 2030.

As mentioned at the beginning of this paper, these were only some preliminary results. A lot of work is still to be done. For example, there is a lot of qualitative data analysis to do, because the qualitative answers hold potential for an in depth analysis. The final results will then be discussed with selected experts in order to derive policy recommendations for policy makers and other stakeholders like the Ministry of Education and Research on the basis of the results of this study.

Finally, three to four scenarios will help to illustrate and communicate these results.

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