



Flood disasters and COVID-19 pandemic in the greater Dresden area

Identifying situational vulnerability and strengthening societal resilience



Klimaneutral

Druckprodukt

ClimatePartner.com/12682-2207-1023

Research Writings

The purpose of the Research Writings is to continuously publish the results of scientific research of the German Red Cross. The Division for Research on Civil Protection at GRC National Headquarters launched an investigation of research requirements in 2012 spanning the entire organisation and involving all regional branches. During this process, three essential topic areas were identified as desirable research focuses: **Resilience**, **so-cietal development**, and **resource management**. Since 2019, **documentation of operational situations** has been published in Volume 7.¹

The Research Writings address these topics and offer impetuses for the continued strategic development of the organisation.

¹ The colours are reflected in the respective cover picture.

Research publication series Volume 11 – Identifying situational vulnerability and strengthening societal resilience

Flood disasters and COVID-19 pandemic in the greater Dresden area

Volume 11 of the research publication series deals with contextual factors influencing the emergence of situational vulnerability during the floods in 2002, 2006 and 2013, as well as the still ongoing COVID-19 pandemic in the Dresden metropolitan region. In addition, the volume focuses on describing the practical recommendations developed on the basis of these findings to reduce social vulnerability and strengthen social resilience.

The findings in this volume were developed as part of the research project “**B**uilding **E**uropean Communities’ **R**esilience and **S**ocial Capital” (BuildERS), which was funded under the EU’s “Horizon 2020” research and innovation programme. The project aimed to increase the resilience of the European population in general, and, in particular, of the most vulnerable people, by providing new scientific evidence on which policy reforms to improve civil protection can build on. The German Red Cross (DRK) participated together with the International Centre for Ethics in the Sciences (IZEW) of the University of Tübingen in the project as part of a case study based in the Dresden metropolitan region. The results of this case study are documented in this volume of the DRK research publication series.

Identifying situational vulnerability and strengthening societal resilience

Flood disasters and COVID-19 pandemic in the greater Dresden area

Legal Information

Issuer: Deutsches Rotes Kreuz e.V., Carstennstraße 58, 12205 Berlin, Germany

Publisher: DRK-Service GmbH, Berliner Straße 83, 13189 Berlin, Germany

Authors: Peter Windsheimer, Maira Schobert, Elsa Schmersal, Friedrich Gabel, Matthias Max
forschung@drk.de

Cover photo: DRK (top left), LV Brandenburg/DRK (top right), Julia Ikstadt/DRK LV Westfalen-Lippe (below) ©

Print: Lehmann Offsetdruck & Verlag GmbH, Gutenbergring 39, 22848 Norderstedt

Typesetting/Layout: Claudia Ebel

Production/Distribution: DRK-Service GmbH, www.rotkreuzshop.de

Art.no. 03088

All rights reserved. Reproduction, translation, storage, processing and distribution in any form are not permitted.

Reprinting – including in extract form – only with permission of the publisher.

Download

This publication is also available for download at www.drk-foschung.de.

Citation

Deutsches Rotes Kreuz e.V. (2022). Identifying situational vulnerability and strengthening societal resilience. Flood disasters and COVID-19 pandemic in the greater Dresden area. Research writings: Vol. 11. Berlin.



Content

1	Introduction	7
2	The BuildERS research project	10
3	Central concepts	12
3.1	Vulnerability	12
3.2	Resilience	13
3.3	Social capital	14
4	Findings from previous German Red Cross research projects	16
5	Case study in the wider Dresden area	18
5.1	Relevance of the case study for the German Red Cross	18
5.2	Crises and disasters studied	19
6	Results of the case study	23
7	Practice recommendations	31
8	Conclusion and outlook	37
9	References	38
10	List of Figures and Tables	44
11	For quick readers	45
	Also available in English	46

1

Introduction

Crises, disasters and major emergencies affect people differently. These differences in the degree to which people are affected cannot be explained solely by their proximity to the area of damage, but depend above all on the interaction of various social and situational factors (Reiter et al., 2017). Knowing who is particularly vulnerable and in need of support in the context of a specific event is a key prerequisite for the targeted planning of disasters relief measures by authorities and organisations with security tasks (BOS). Only if people who are particularly affected are identified can the limited resources of civil protection be used in a targeted manner to adequately address the existing needs of the population for assistance. As a central actor in civil protection, this question is essential for the German Red Cross in order to be able to provide help to those affected according to their degree of need and in accordance with its principle.

For this reason, the German Red Cross has already addressed the question of how the population's susceptibility to crises and disasters (vulnerability) can be reduced and its resilience improved in several research projects. In the KOPHIS project ("Care-dependent Persons in Disaster Situations"), the German Red Cross has investigated the special needs and abilities of older people and people in need of ambulatory care in the context of crises and disasters and how these can be better taken into account in disaster management planning (Deutsches Rotes Kreuz e. V., 2018c, 2018b). In the INVOLVE project ("Initiate Volunteerism to counter Vulnerability"), knowledge about which target groups of civil protection need special support and what concrete needs they have was identified as a central condition for strengthening societal resilience (Deutsches Rotes Kreuz e. V., 2017, p. 22).

The needs-based adaptation of planning in civil protection is particularly relevant with regard to processes of social change, which lead to "(...) needs, capabilities and vulnerabilities of the population changing" (Max & Schulze, 2021, p. 63). Past emergencies have repeatedly shown that civil protection is confronted with changing needs for assistance. In practice, however, the needs of particularly vulnerable persons have hardly been given particular attention so far. This became especially clear looking back at the last two years, in which Germany was hit by two very different extreme events. These were the COVID-19 pandemic, which has been ongoing since 2020, and the floods in North Rhine-Westphalia and Rhineland-Palatinate in July 2021. Both events led to very different forms of affectedness. Many people lost their lives in the floods, numerous houses were destroyed, and the extent of further material damage was also enormous. Several nursing homes and hospitals were affected by the floods and had to be evacuated, if this was at all possible (Wochenspiegel, 2021; ZDF, 2021). Outpatients were temporarily inaccessible to relatives and care providers due to destroyed infrastructure (Gaede, 2021).

The COVID-19 pandemic potentially affects the entire population, with some people being particularly vulnerable to the virus. These especially vulnerable people include older people, people with pre-existing conditions and residents of residential care facilities. People in precarious working and living conditions also have an increased risk of infection (McNamara et al., 2021; Zimmermann et al., 2021). Furthermore, the measures taken to contain the pandemic and protect vulnerable people have themselves had a negative impact on other parts of the population in some cases. For example, families with children were exposed to above-average burdens during the school and day-care centre closures. People with a migration background were clearly more frequently affected by income losses than the population average (Hövermann, 2020, pp. 9–10).

These examples illustrate the great situational differences when it comes to being affected by crises and disasters. As part of the BuildERS research project, the German Red Cross, together with the International Centre for Ethics in the Sciences and Humanities (IZEW) at the Eberhard Karls University in Tübingen, carried out a case study. In it, the question which factors influence the emergence of situations in which people are vulnerable and what differences and similarities there are with regard to various crises and disasters was examined. This situational approach further develops previous German Red Cross research findings on general and rather statically conceived “vulnerable groups” by more strongly taking into account the contextual factors of different crisis events. This recognises that vulnerability can change depending on the situation.

As a European research project under the EU’s Horizon 2020 programme, BuildERS has a special role in the German Red Cross’s research activities, as it brought together partner organisations from academia and practice from ten countries. The German Red Cross participated in the research project primarily with a case study on the flood disasters of 2002, 2006 and 2013 and the current COVID-19 pandemic in the Saxon state capital Dresden and the immediate surrounding area.

This Volume 11 of the research publication series summarises the practice-relevant findings of the BuildERS case study. The focus here is on presenting the practical recommendations developed on the basis of the research results for reducing social vulnerability and strengthening social resilience. After a brief description of the project, the central concepts underlying the study are explained. This is followed by a placement of the research project in the context of earlier German Red Cross research projects. Based on this, the added value of the case study for the work of the German Red Cross is demonstrated. This is followed by an overview of the crisis and disaster events examined in the case study. In the following main part of this research publication, the central findings of the case study and the recommendations for practice based on them are presented. Finally, the significance of the results for civil protection in the future is shown.

At this point, we would like to express our special gratitude to all respondents who took the time during the online survey and the expert interviews to look back on the past flood disasters and share their impressions of the COVID-19 pandemic. Our thanks also go to the cities of Dresden and Pirna for their help in distributing the online survey.

2

The BuildERS research project

Term: May 2019 - April 2022

Funded by the EU's Horizon 2020 research and innovation programme, the **BuildERS project** (*Building European Communities' Resilience and Social Capital*) pursued the goal of increasing the resilience of the European population by providing new scientific knowledge. This knowledge can be used as the basis for policy reforms to improve civil protection. The project focused on the parts of the population that are most vulnerable to crises

and disasters and aimed to reduce their vulnerability and increase their resilience. In doing so, the project built on the understanding that reducing societal vulnerability and strengthening societal resilience requires a whole-of-society approach. This must focus, in particular, on the most vulnerable members of a society, while taking into account their different living circumstances. With this approach, BuildERS aimed to increase the capacity to deal with extreme events throughout society. To achieve this, the project developed new technical and social approaches, as well as recommendations for action to improve knowledge about disaster risks, prepare for extreme events and strengthen the social capital² of those affected.



With these objectives, the BuildERS project was also in line with the *Sendai Framework for Disaster Risk Reduction 2015 - 2030* (UNDRR, 2015), to the implementation of which the project wanted to contribute. This framework aims to improve the resilience of society as a whole to crises and disasters by taking all social groups into account when planning for disaster situations and disaster management activities. This is to ensure that the needs of all population groups are adequately addressed in crises and disasters. To this end, the Framework considers a comprehensive whole-of-society approach that includes *coordination across relevant institutions and sectors and the full and meaningful participation of relevant stakeholders at appropriate levels; investing in the economic, social, health, cultural and educational resilience of persons, communities and countries*" (UNDRR, 2015, p. 11) as an important prerequisite.

The research project involved a total of 17 partners from eight European countries, as well as Indonesia and the USA, under the project management of the *Technical Research Centre of Finland* (VTT). Within the framework of the project, a total of seven

² For social capital, see chapter 3.3

different case studies were conducted in six countries: Estonia, Indonesia, the USA, Finland, Italy and Germany.

The German case study was conducted by the German Red Cross together with the International Centre for Ethics in the Sciences and Humanities (IZEW) at the University of Tübingen. Together, the two partners conducted a case study on social vulnerability in the Dresden area. The case study was concerned with examining contextual factors that contribute to some people being more likely to find themselves in particularly challenging situations (in which they are, therefore, also particularly vulnerable) in crises and disasters than other people. The aim was to develop recommendations for civil protection that aim to protect all affected people equally well. In this sense, the case study did not focus on specific social groups, but on the geographical area of Dresden. This open approach was intended to find out who is vulnerable and for what reasons in different crises and disasters. With the focus of the study on the flood disasters of 2002, 2006 and 2013, as well as the impact of the current COVID-19 pandemic in Dresden, new insights into situational vulnerability in different disaster and crisis situations could be generated. In addition, by comparing two disasters, it was also possible to examine the difference between a temporally limited event with great destructive power (flood) and a significantly longer-lasting „chronic“ disaster (pandemic) with regard to the emergence of situational vulnerability.

3

Central concepts

For the BuildERS case study, the three theoretical concepts of “vulnerability”, “resilience” and “social capital” are of central importance and are explained below.

3.1 Vulnerability

In previous projects, the German Red Cross has already addressed the question of who is particularly vulnerable in crises and disasters and thus requires special support from civil protection. A variety of different approaches exist in research in this regard. How exactly vulnerability is to be understood and to whom the term refers is the subject of ongoing expert debates. Especially in earlier research approaches, a group-based understanding was often propagated, according to which entire population groups are considered vulnerable based on certain characteristics (age, gender, level of education, etc.). In the course of previous German Red Cross research projects, vulnerability was also mostly defined in relation to specific population groups (old people and people in need of care in the KOPHIS project) or generally as “susceptibility to injuries and impairments” (Deutsches Rotes Kreuz e. V., 2017, p. 7). Classic examples of population groups that are considered vulnerable according to this understanding are people with physical or mental impairments, people living in poverty or who have problems communicating their needs and understanding published information due to language or cultural barriers (Gabel, 2019).

This approach to vulnerability does have some advantages, as it makes it quite easy to make statements about the vulnerability of individuals based on their group membership. Some individuals are actually more likely than the population average to be affected across different crises and disasters (Orru et al., 2021). This makes it quite easy to make assumptions about which people need the most help in the event of a disaster. However, the main problem with this approach is that vulnerability is seen as a constant state, and situational differences are not taken into account. It is also assumed that individuals within a defined social group have similar needs, abilities and resources and are, therefore, also vulnerable in at least a comparable way. But this does not correspond to reality (Gabel, 2019). For example, older people are a very diverse social group, within which resources and needs sometimes differ significantly.

Therefore, in recent years, there has been increasing research on the specific challenges posed by different crisis and disaster contexts and on the individual coping capacities of affected persons. This refers to the abilities and resources of the affected that enable them to cope differently well with various crisis-related challenges. These can differ,

sometimes significantly, with regard to different crises and disasters (Gabel & Krüger, 2021). For example, it is conceivable that a person can cope well with an extreme flood because they have the financial resources to flood-proof their house and can avoid the flood in a second home. The same person, on the other hand, may suffer greatly from the social isolation associated with the COVID-19 pandemic and be particularly vulnerable to the effects of the disease because of their age. Therefore, the focus of planning should be primarily on situations where people become vulnerable because the challenges they face in a particular crisis or disaster exceed their currently available coping capacities (Hilhorst & Bankoff, 2010). This means that any person can become vulnerable under certain unfavourable circumstances.

In this sense, vulnerability should be understood as a context-dependent, individual and also highly dynamic characteristic of persons that is constantly changing and depends on a variety of situation-specific and mutually influencing factors. The BuildERS case study subscribes to this understanding. The definition of vulnerability developed in the INVOLVE research project (2017) was taken as a starting point:

Starting point: Vulnerability

Vulnerability in general means the susceptibility to injuries and impairments. Vulnerable means vulnerable or in need of help. In the context of crises and disasters, vulnerable people are those who are particularly susceptible to the negative effects of a crisis or disaster for various reasons (Deutsches Rotes Kreuz e. V., 2017, p. 7).

This understanding of vulnerability to crises and disasters was further developed in the BuildERS case study by focusing more on the role of situational factors in the emergence of vulnerability. **Who is vulnerable and to what extent depends on various factors interacting with the specific crisis situation and can change in the course of an event.** This approach also picks up on a central idea of the United Nations Sendai Framework for Disaster Risk Reduction, which states that the reasons for vulnerability do not lie (exclusively) in a person's characteristics, but equally in the specific (life) situation in which they find themselves (UNDRR, 2015). It, therefore, makes more sense to speak of **situational vulnerability**.

3.2 Resilience

Another concept central to the case study in Dresden is resilience. This term derives from the Latin word *resilire* and literally means "to bounce off, bounce back, not to stay stuck" (Alexander, 2013, p. 2708). This concept has its origins in psychology (Garmezy, 1973), where it mostly describes how well a person can deal with traumatic experiences. It has since been taken up by numerous other disciplines. For example, also ecolog-

gy, where it describes the ability of a system to remain functional despite disturbances and to return to its initial state as quickly as possible after the disturbance events have ended (Holling, 1973).

In the course of the BuildERS case study, resilience is understood as a concept closely related to vulnerability. While vulnerability describes, among other things, how susceptible someone is to the effects of an extreme event, resilience refers to the ability of individuals and social systems to deal with the consequences of extreme events, to recover from them or even to grow from them and emerge stronger. Similar to vulnerability, resilience is to be understood as a dynamic concept. In certain circumstances, it is even conceivable that measures and activities implemented with the best of intentions by political leaders and aid organisations may unintentionally weaken the resilience of some individuals.

The definition of resilience used in the BuildERS case study is based on the definition developed in the context of German Red Cross's international cooperation. It was further developed for the case study so that its focus is primarily on successfully dealing with the effects of crises and disasters that have already occurred.

Definition: Resilience

Resilience describes the ability of individuals, communities, organisations or countries exposed to the risk of crises, conflicts, disasters and their underlying vulnerability factors to cope with the negative impacts of emergencies, to reduce their effects and to recover promptly after a crisis, conflict or disaster without jeopardising long-term development prospects (based on Deutsches Rotes Kreuz e. V., 2014a, p. 6).

3.3 Social capital

The third central theoretical concept for the case study is that of social capital. It was coined by the sociologist Pierre Bourdieu who defines it as follows:

“ Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition “

(Bourdieu, 1997, p. 51)

A person's social capital thus consists of those resources that a person can draw from networks accessible to him or her. These resources are thus indirectly available to him or her (even in a disaster).

Moreover, it can be observed that social capital is also very unequally distributed within society. Consequently, different groups of people have access to social contacts to very different degrees, which they can translate into social capital. This is a reflection of the fundamental inequalities of society (Tierney, 2019). In addition, the availability and retrievability of theoretically existing social capital strongly depends on the situation a person is currently in. For example, a person who normally has access to a high level of social capital may not be able to mobilise and harness it in certain situations because they cannot reach their contacts (Aldrich, 2012, p. 30). This could be the case, for example, because the person has less access to their contacts during a pandemic due to quarantine.

In the context of the research publication series, social capital is, therefore, defined as follows, building on the discourses listed above:

Definition: Social capital

Social capital describes the totality of all resources that people can mobilise with the help of their social network, or at least could mobilise under favourable conditions. However, the extent to which people can actually access the social capital that is theoretically available to them also always depends strongly on the context of the situation in which they find themselves. A distinction can be made between *bonding*, *bridging* and *linking* social capital (Aldrich & Meyer, 2015):

Bonding refers to close emotional relationships with other people of comparable social status, such as friends or family.

Bridging connects people across different social groups, such as ethnic or economic groups.

Linking describes the social connections to people who hold positions of power and can thus influence the distribution of resources.

4

Findings from previous German Red Cross research projects

The case study in the BuildERS project ties in with previous German Red Cross research activities on the topic of vulnerability and resilience to crises and disasters. In particular, the INVOLVE, KOPHIS, ResOrt (“Resilience through Social Cohesion”) and K3 (“Crisis Communication in the Event of a Disaster”) projects have produced important findings in this regard, which are briefly summarised below.

The KOPHIS project has focused on older people and people in need of outpatient care, often a particularly vulnerable population group, and has shown that their diverse needs (but also their capacities) have so far hardly been taken into account in civil protection planning. Conversely, care infrastructures are hardly prepared for crisis and disaster situations. The recommendations developed in KOPHIS aim to sensitise persons in need of ambulatory care and their relatives to crisis prevention and to involve them in preventive measures. In addition, the need for close socio-spatial networking between local civil protection and care infrastructures is emphasised in order to enable needs-based assistance in the event of crises and disasters (Deutsches Rotes Kreuz e. V., 2018b, 2018c).

The INVOLVE project addressed the question of how disaster services can strengthen resilience in the face of crises and disasters. The German Red Cross disaster services supports people in emergency situations who do not need acute medical care, e.g. as a result of evacuations. The tasks of the disaster services include the provision of information, food and emergency accommodation, as well as social care for people in particular need of help. In view of the increase in more diverse and specialised needs, emergency services are increasingly confronted with challenging situations that cannot always be adequately addressed due to limited human resources and capabilities. In the project, recommendations were, therefore, developed for the sustainable orientation of the disaster services in order to ensure a demand-oriented care capacity. Three conditions were identified for strengthening resilience through the disaster services: 1) Sufficient human resources in the form of volunteers, 2) Knowledge about target groups and needs, and 3) Socio-spatial networking with external actors. These requirements go hand in hand with a change in the role of the disaster services as a mediator and organiser of assistance in the sense of a socio-spatial approach to civil protection (Deutsches Rotes Kreuz e. V., 2017, 2018a).

How a socio-spatial approach to civil protection could be designed was elaborated further in the ResOrt project. This project had a particular focus on participatory approaches. Crisis management is not seen here as an isolated task of civil protection, but should also include all relevant organised actors from everyday life. In addition, with a view to the socio-spatial level, social cohesion and neighbourhood help, in particular, are emphasised as important resources for crisis management, which must be actively integrated and strengthened for the benefit of all. This is intended to raise awareness of crisis preparation on a broad level (Deutsches Rotes Kreuz e. V., 2020a).

Further important findings for research within the BuildERS project were developed in the K3 project, which investigated the potential of social media and digital volunteering for civil protection. This took into account the increasing importance of information gathering, communication and engagement via the Internet in the context of crisis and disaster situations in recent years, with a view to the current relevance for civil protection (Deutsches Rotes Kreuz e. V., 2018d).

Overall, the various research projects have succeeded in examining different aspects of strengthening social resilience. The findings from the BuildERS case study add an important unifying element to these different approaches by examining what factors at an individual level contribute to people becoming vulnerable. From this, recommendations for civil protection can be derived that can help to better address the situational needs of those affected.

5

Case study in the wider Dresden area

For the case study conducted by the German Red Cross in cooperation with IZEW on the flood events of 2002, 2006 and 2013, as well as on the ongoing COVID-19 pandemic in the Dresden area, a qualitative research approach based on 20 expert interviews was combined with a quantitative approach based on an online survey with 118 participants. The surveys were conducted from December 2020 to March 2021.

In the following, the relevance of the case study for the practice of civil protection in the German Red Cross is shown, and an overview of the events studied is given.

5.1 Relevance of the case study for the German Red Cross

The aim of the BuildERS case study was to explore vulnerability situationally and to develop recommendations to reduce vulnerability in order to strengthen individual and societal resilience. The case study, therefore, investigated who became vulnerable in the two crises studied (flood and pandemic) and for what reasons in the respective situations. It also studied how this vulnerability manifested itself and what special support needs arose as a result. Approaches to vulnerability from previous German Red Cross research projects were further developed through a stronger focus on situational and contextual factors.

The Dresden region was chosen because it was very badly affected by several exceptional flood disasters within a few years. At the same time, there are good official documentation and reappraisals of these events that could be used for the conception of the case study. German Red Cross research has also already dealt intensively with the 2013 flood in Dresden – especially with regard to unaffiliated helpers (Deutsches Rotes Kreuz e. V., 2014b). Although the region has already been intensively researched in the post-flood context, especially after 2013, it is worth taking another look at the region with a focus on the factors that contribute to situational vulnerability. This is because flood disasters have not yet been analysed from this perspective.

In the middle of the design phase of the study, Germany was hit by the COVID-19 pandemic. This made it possible to include an acute – and still ongoing – crisis in the case study and to explore it comparatively with past flood disasters. Unlike the flood disas-

ters, which could only be looked at in retrospect, the COVID-19 pandemic provided a rare opportunity to examine the local impact of the crisis in current events. Moreover, the additional focus on the pandemic enabled a more detailed investigation of situational factors in the emergence of vulnerability, as two very different exceptional events could be compared.

As will become clear in the following, the findings of the case study imply that civil protection actors need greater openness to situational vulnerabilities in the planning and implementation of individual measures, in order to be able to provide assistance according to need.

5.2 Crises and disasters studied

The flood disasters of 2002, 2006 and 2013

The Free State of Saxony was the scene of three extreme flood events within only eleven years. When heavy rainfall caused flooding in Central Europe in August 2002, Saxony was one of the regions particularly affected. Days of rainfall had caused many rivers to overflow their banks and caused damage in numerous communities. Between 14 and 18 August, the Elbe flooded large parts of the state capital Dresden and other cities in its course. In Saxony alone, there were 20 deaths and 110 injured (Kirchbach et al., 2002, p. 13). In Dresden, the maximum water level of 940 cm exceeded all previous events and 35,000 people had to be evacuated (Deutsches Komitee für Katastrophenvorsorge, 2003, 8 & 9). All in all, tens of thousands of police, fire brigade, Federal Armed Forces, Federal Agency for Technical Relief (THW) and aid organisations were involved in the flood operation. In addition, thousands of unaffiliated helpers got involved in various areas during and after the flood (Kirchbach et al., 2002, pp. 193–211).

In 2006, Saxony was again hit by an extraordinary flood. Although the water levels in some places reached even higher levels, the overall intensity of the event and the extent of damage fell short of the flood of 2002 (Undine, 2002, 2006).

In June 2013, another “flood of the century” occurred in Central Europe within a good decade as a result of days of rainfall. Germany was one of the countries that was hit particularly hard, especially in the eastern and southern federal states along the Elbe, Danube and their tributaries. Nationwide, 14 people died, and 128 were injured (Deutsches Komitee Katastrophenvorsorge, 2015, p. 163). In Saxony, a disaster alert was issued in numerous municipalities in the period from 2 to 3 June (Sächsische Staatskanzlei, 2013, p. 37). About 33,700 people were affected by evacuations there, 13,300 of them in Dresden alone (Sächsische Staatskanzlei, 2013, p. 49).

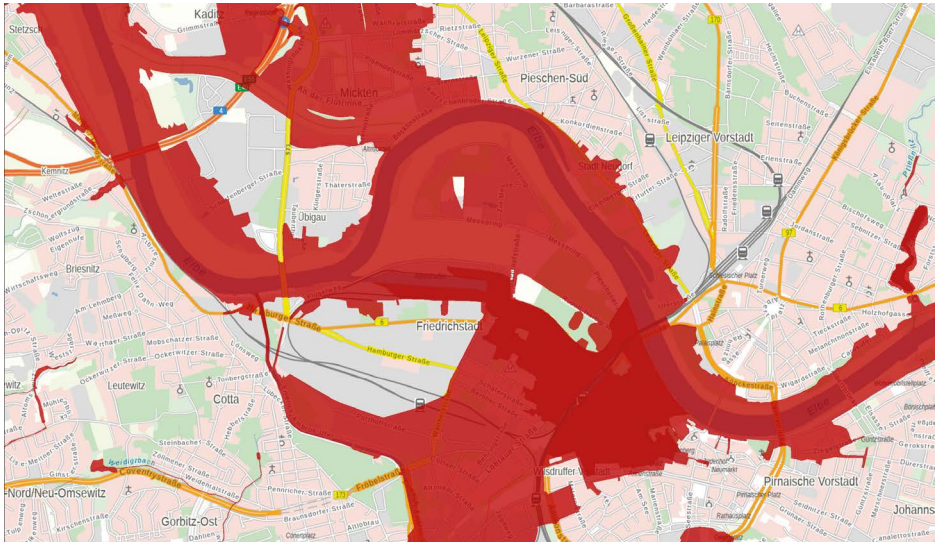


Figure 1: Areas flooded in the city centre of Dresden in 2002, Source: (Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie [LfULG], 2022; Staatsbetrieb Geobasisinformation und Vermessung Sachsen [GeoSN], 2022)

For the fire brigade, it was the largest fire service operation in the Federal Republic of Germany to date, with more than 82,000 firefighters deployed (Deutsche Feuerwehrzeitung, 2013). THW was involved in disaster management within the territory of the Federal Republic of Germany with more than 16,000 emergency personnel (Technisches Hilfswerk, 2013). In addition, an average of 3,000 to 4,000 German Red Cross helpers were active every day (Deutsches Rotes Kreuz e. V., 2014b, p. 19). German Red Cross emergency workers set up emergency shelters, carried out evacuations of homes and care facilities and rescued people from the floods with boats and helicopters (ibid.). In addition to the professional emergency services, thousands of citizens acted to help themselves or others, with organising via social media playing a central role (Deutsches Rotes Kreuz e. V., 2014b).

The COVID-19 pandemic

The ongoing COVID-19 pandemic in Saxony was considered as another case study. The period examined was from the beginning of the pandemic in March 2020 until the end of April 2021. Consequently, the study only covers events up to the peak of the third wave of the pandemic and the early phase of the vaccination campaign.

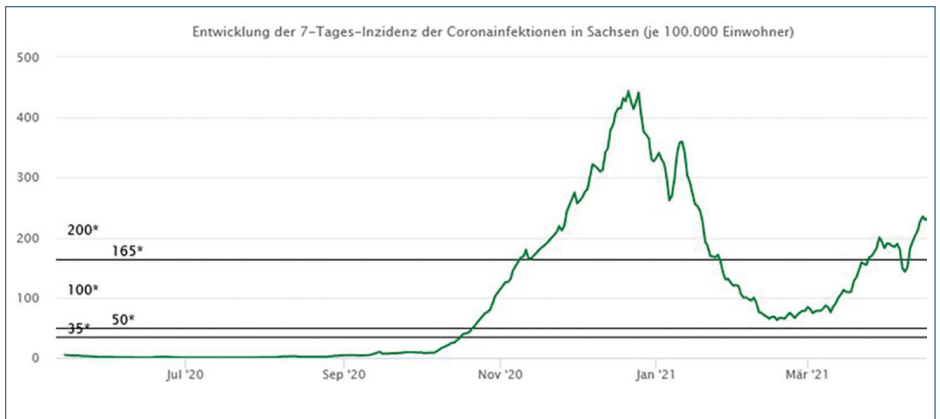


Figure 2: Development of 7-day COVID-19 incidence in Saxony, Source: Freistaat Sachsen (2021b)

The first COVID-19 case was identified in Saxony on 2 March 2020 (MDR, 2021). At first, it seemed that Saxony would be able to deal with the pandemic relatively well, similar to other federal states in eastern Germany. By the end of October 2020, the COVID-19 7-day incidence³ remained consistently below 50 infections per 100,000 population. In October, however, just as in other parts of Germany, case numbers began to rise rapidly until Saxony reached a 7-day incidence of 444 around Christmas 2020. In the district of *Sächsische Schweiz-Osterzgebirge*, the incidence rate even rose to 628.3, which was considered a very high incidence rate at the time. Subsequently, the rate fell again, and Saxony managed to push it back below 100, just as it did at the federal level. On 16 February 2021, the incidence was 62.6. After that, the incidence in Saxony increased again until it stagnated at a relatively high level. On 30 April 2021, the 7-day incidence was finally at 210.7 (Freistaat Sachsen, 2021b).

At the beginning of the pandemic, Saxony imposed an initial lockdown in mid-March 2020. Public life was severely restricted, including the closure of schools and kindergartens. As infection rates fell to relatively low levels, the measures were gradually relaxed between April and July 2020. With infection rates rising again in October, new restrictions were enforced. In November 2020, Saxony imposed a second lockdown in identical fashion to the rest of Germany, shutting down much of public life. In December, travel restrictions and curfews were added in particularly affected regions. With falling case numbers, schools and kindergartens were reopened under strict hygiene conditions at the end of February and beginning of March 2021. On 23 April 2021, Saxony implement-

³ The 7-day incidence indicates how many new infections per 100,000 inhabitants were recorded in the last seven days.

ed the Germany-wide standardised “Federal Emergency Brake” (“Bundesnotbremse”), implementing strict measures based on regional incidences (Freistaat Sachsen, 2021a).

The vaccination campaign in Saxony started after Christmas 2020, as in the rest of Germany. 1,000,144 adult citizens received at least one vaccination by 29 April 2021. This corresponds to a vaccination rate of 24.6 per cent, making Saxony the federal state with the lowest vaccination rate at that time (Bundesministerium für Gesundheit, 2021).

By the end of April 2021, 263,176 people in Saxony had been proven to be infected with SARS-CoV-2, and 9,100 people had died from or with the disease. This corresponds to a lethality rate of 3.5 per cent (Freistaat Sachsen 2021b). Saxony was thus strongly affected by the pandemic during the period under study.

6

Results of the case study

In the following, the results of the case study relevant to civil protection are presented, which should serve as an impulse for future strategy development processes. The results are based on the expert interviews and the quantitative survey.

The vulnerability of a person depends on contextual factors

The results of the case study on the COVID-19 pandemic and the past floods in the Dresden area show that vulnerability depends on the specific context: During the COVID-19 pandemic, for example, elderly people with pre-existing conditions were more vulnerable, while during the floods, people with few financial resources experienced a larger need for assistance. This also means that people who were not living in a vulnerable life situation before the extreme event can become vulnerable as a result of a specific event. These include, for example, elderly people who were able to look after themselves well in everyday life, but were forced to leave their homes due to flooding and were therefore highly dependent on assistance.

In addition, a different way of dealing with the events became apparent, which was justified at least in part by the different visibility of the floods and the pandemic. The floods could easily be perceived on site as well as through photos or videos. The pandemic, on the other hand, is for many a more abstract crisis that is not so easily perceived – it is, in a sense, a disaster without an event (Horn, 2014, p. 111). Moreover, the floods each affected only a specific, local area, whereas the pandemic affects people worldwide (to varying degrees). The successful containment measures at the beginning of the pandemic initially resulted in the paradoxical situation that the number of people who fell ill was relatively low, which in turn led to the measures often being judged as excessive and difficult to follow. The visibility of a crisis can also influence people's behaviour. For example it can influence the extent to which they participate in coping measures.

In addition to the perception, the reactions and response options of the population also differ: During the floods, a great social cohesion and a strong 'sense of togetherness' were observed. There was a lot of commitment and mutual helpfulness. People could do something together to combat the disaster and its effects. The pandemic, on the other hand, is characterised by the need to keep physical distance. The focus is on not doing but on refraining from doing things to limit the spread of the virus. This led many people to report feeling isolated and lonely. The loss of everyday structure and the insecure situation had a negative impact on people's psychosocial well-being. Differences were also evident with regard to assistance: During flood situations, relief measures were of-

ten organised or bundled by parts of the public administration, neighbourhood centres and also private initiatives. A good example of this was provided by the operator of the student club Bärenzwinger in Dresden. During the 2013 floods, it independently organised the support of numerous volunteers via Facebook to protect its premises from the floods (see Deutsches Rotes Kreuz e. V., 2014b, pp. 22-27).

In the phase of the pandemic being studied, support services were perceived as more isolated and less centrally organised. In summary, it can be seen that the nature of the disaster, its perceptions and coping options influence the situational emergence of vulnerability. This also means that depending on the type of event, as well as other factors, such as possible coping strategies, different people become vulnerable.

There is only a relatively weak correlation between most of the socio-demographic characteristics of the respondents, their social vulnerability and the negative impacts experienced

Another aspect of the study dealt with the influence of socio-demographic characteristics on vulnerability and vulnerability attributions. The analysis of the online survey investigated whether there is a correlation between the socio-demographic characteristics (e.g. age and gender) of the respondents and their self-assessed vulnerability to the impacts of floods and the COVID-19 pandemic. In other words: It was investigated as to whether certain vulnerable groups can be identified with regard to both events.

It was found that in the case of both the pandemic and the floods, people with disabilities or severe chronic diseases were particularly at risk. The trend also showed that women and non-binary people were more affected by the impacts of both extreme events than men. Interestingly, no clear effect could be found for the age of interviewed persons with regard to vulnerability to floods. For the COVID-19 pandemic, it was a different story: Older people were significantly more affected by the impacts – especially in the form of serious illnesses – than the population average. A final interesting correlation was found between a person's level of education and their vulnerability. Overall, the survey showed that respondents with a higher level of education were less vulnerable to the effects of the floods and the pandemic than other people. With regard to other socio-demographic characteristics, such as religious affiliation or residence in metropolitan Dresden or the more rural surrounding area, no relevant correlations were found.

However, it should also be noted that the correlation between an interviewee's wealth and their self-assessed vulnerability could not be established in the case study due to survey and research limitations. Furthermore, the respondents are not representative of the population of the Dresden metropolitan region.

In summary, none of the socio-demographic characteristics examined showed a constant correlation with individual vulnerability across the pandemic and floods. Chronic health problems and disability are the exception to the rule, but here the links were usually not particularly strong. Overall, the survey showed that there are no clear correlations between the socio-demographic variables investigated and the self-assessed vulnerability of the people interviewed, so that it hardly makes sense to speak of “vulnerable groups”. Existing differences also came to the fore with regard to the pandemic rather than the floods.

In disaster response, the diversity of society is often not sufficiently taken into account at the beginning of the relief effort

In a further point, the interviews with experts were used to examine the extent to which the diversity of the population was considered in the planning of civil protection and taken into account in measures. The starting point for this was the question of who could not benefit from civil protection measures or was even excluded from them.

Here, it became apparent that the extent to which the social diversity of the population is considered and taken into account in crisis communication, as well as in the planning and implementation of relief measures, changes over the course of an operation. Thus, the diversity of the population tends to be taken into account to a larger degree at later points in the deployment than initially.

Often, emergency plans are based on certain presuppositions about affected people, such as that they understand German, can move about in normal everyday life without restrictions, can look after themselves and can actively contribute to their rescue. Needs of, for example, homeless people, or people who cannot hear, are often not taken into account enough. This is also exemplified in the field of crisis communication, where information about crises and disasters is often not accessible without barriers. For example, they are often only published in German or in complicated language. In the expert interviews, as well as in the online survey, it was noted that warning messages of the warning app NINA⁴ are sometimes perceived as too complicated and incomprehensible (this applies to storm warnings, for example, as many people have no idea what wind strength describes a storm and how strong it is). The warning app does make an effort to be accessible, and there is the option to select different languages. In practice, however, it became apparent that it is possible to switch the app to different languages, but that information was often only entered in German.

⁴ For information on the NINA warning app, see www.bbk.bund.de/DE/Warnung-Vorsorge/Warn-App-NINA/warn-app-nina_node.html (as of: 24.03.2022)

During the pandemic, it also became clear how crisis management (especially communication) evolves over time: During the first response, information was only disseminated in German. Information and instructions for action were often translated into other languages only on demand and after criticism regarding the public communication. As the pandemic progressed, new information was then published directly in different languages. Also, with regard to the question of which institutions were still accessible during a lockdown or other restrictions, there was an increase in awareness over time.

Overall, an increasing sensitivity to different needs and abilities of people can be observed in civil protection. Nevertheless, 'blind spots' still exist, whereby not all people in need of help are seen and adequately reached.

Crisis management measures can increase vulnerability

Furthermore, it was examined as to what extent measures to cope with crises and disasters, and their effects can themselves promote or even create vulnerabilities. The focus here was on the unintended negative effects of measures for some affected persons.

It was found that official responses can negatively influence vulnerability in two ways. On the one hand, coping measures can themselves create vulnerability: For example, the measures taken to limit the spread of the virus in order to avoid loss of life. The mask requirement introduced for this purpose, created a difficult situation for those who cannot wear a mask due to physical or mental limitations. Furthermore, the pandemic led to layoffs or short-time work in many companies, which resulted in considerable financial losses for many people. The increasing burden on families due to school closures and home schooling also created new vulnerabilities. While stress levels increased, many activities and leisure time activities that reduce stress and make it easier to deal with difficult situations were no longer possible.

During the floods, there was a completely different situational vulnerability created by official coping measures. For example, opening a dike to relieve downstream locations protected people in one location from flooding, but at the same time exposed people in other locations who were previously safe from flooding (Issing et al., 2013).

In addition, situations arise in which coping measures reinforced existing inequalities and vulnerabilities, as demonstrated, for example, by the COVID-19 pandemic. People who dependent on housing programs and homeless people were particularly affected by the loss of support services during the lockdowns. Other support services, such as those for people with addictions, continued online, but this did not provide the same level of support and treatment. Self-help groups could also only meet online, which was perceived by many of those affected as very limiting and a hindrance to their health. Victims of do-

mestic violence had hardly any possibility to get help or to move in safe situations due to lockdowns and contact restrictions.

These examples illustrate that civil protection measures, as well as governmental crisis and disaster response measures, can also have unintended negative impacts that need to be considered and potentially mitigated.

Civil protection workers and social and health workers can themselves become vulnerable and be at risk

Deployment in crisis areas can be dangerous, psychologically challenging or even traumatising. Civil protection workers and social and health workers can, therefore, become vulnerable themselves. Often, they have to work more, as, for example, in the course of the pandemic, while at the same time there is less time for regeneration. They may also be affected by the crisis themselves, for example, through a flooded home or their own COVID-19 infection. Especially during the pandemic, some volunteers dropped out because they themselves belonged to the risk group and, therefore, did not participate in relief activities. Lack of resources, such as lack of food during the flood operation, also increased the vulnerability of civil protection workers.

Social capital and social networks have a major impact on vulnerability

The social capital available to a person, as well as the cohesion within their social environment, have a significant influence on the personal ability to successfully cope with extreme events. Both factors can noticeably increase a person's individual resilience as well as society's overall resilience to crises and disasters. A close social network can enable a person to receive support from others more easily and thus cope better with a disaster. In addition, community involvement is an important factor for the psychological well-being of individuals.

It should be noted that the social capital available to a person under normal circumstances is not necessarily available for use during an extreme situation. This is mainly because the existence of social capital and social cohesion is based on the ability of people to work together and use existing social networks, contacts and support structures. Depending on the nature of the crisis, however, it may well be the case that cooperation with other people becomes difficult or even impossible. A good example of this is the contact restrictions and lockdowns during the COVID-19 pandemic, which severely limited physical meetings with other people at times.

Social capital is also very unequally distributed within society. Social networks always represent a connection between a certain group of people. Consequently, some people are always excluded. While this exclusion is not problematic per se, it sometimes leads to social capital also having a “dark side”. People with strong networks and many contacts can use them to influence the distribution of resources, such as reconstruction aid, during crises and disasters, which can disadvantage people with little social capital. Their access to important resources is often difficult. People with lower social capital are consequently more dependent on support from social services and civil protection. The example of the floods also shows that those affected with weak social networks were less likely to be able to stay with family members or friends and were, therefore, more likely to rely on public emergency shelters.

Due to these effects, the vulnerability of people with little social capital to the effects of crises and disasters is significantly increased compared to people with a lot of social capital.

The consequences for mental health are among the most serious negative effects of crises and disasters

The first question examined in this context was what effects the floods or the COVID-19 pandemic have on mental health. With regard to both the floods and the pandemic studied, it was found that the people surveyed in the online survey identified the impact of the two extreme events on their mental health as their most serious consequence.⁵ In addition, the negative psychological effects of the floods and the pandemic were considered to be the longest-lasting effects. This observation is particularly noteworthy with regard to the floods, as most of those affected stated that they had been able to cope with other impacts, e.g. of a financial nature, in the meantime.

Furthermore, the survey shows that the psychological impact of the current pandemic was assessed as significantly more severe than was the case in retrospect regarding the floods. For example, 90.7% of respondents reported that they were struggling with negative psychological effects of the pandemic at the time of the survey. One reason for this perception could be the topicality of the pandemic. Nevertheless, the widespread perception of strong negative psychological effects remains a remarkable observation.

⁵ It should be noted, however, that the participants of the survey were not representative of the population of the Dresden metropolitan region, and that seven years had already passed between the last flood and the time of the survey. Furthermore, it is not certain that all the people interviewed were also directly affected by the floods.



Figure 3: Deployment of psychosocial emergency care measures by the German Red Cross in the Ahr valley, source: Müller and DRK e. V. (2021)

Some people can grow personally from a crisis

With a view to the psychosocial effects of crises and disasters, it was also investigated whether and to what extent individuals, parts of society or places may have emerged strengthened from the crisis.

While most people perceive crises and disasters as difficult and stressful, there are also examples of people who cope well or even emerge stronger from exceptional situations. Crises and disasters can also open up opportunities. This applies both to cities in which destroyed districts have been rebuilt more beautifully and functionally, and to people who discover their own previously unknown resources as a result of the crisis. In the online survey, for example, 14.8% of respondents said that the floods had had a positive effect on their lives. For the (still ongoing) pandemic, however, this was the case for only 1.7% of respondents.⁶

⁶ Here, however, the time lag of the survey of at least seven years to the last flood must also be taken into account, whereas the COVID-19 pandemic was still ongoing at the time of the survey.

For example, one interviewee reported that when a children's home had to be evacuated during the floods, there were some children and young people who coped better in the extreme situation and were better able to implement goals they had set for themselves than is the case in their normal everyday lives.

Due to the restrictions during the pandemic, families spent more time together. Many studies and observations show that this has led to an intensification of conflicts and problems: Children and adolescents need more psychological support, so that the corresponding support services were heavily overloaded, closed schools increased educational inequality and UNESCO speaks of violence against women and girls as a "shadow pandemic" due to the increasing violence witnessed in a social environment (UNESCO, 2020). Corresponding observations also dominate the experiences of the experts interviewed. Surprisingly, however, they were also able to observe that the conflictual family situation eased in some families. The reduction of certain social obligations was also experienced as positive by some people.

Crises and disasters can also lead to people who do not have a support network standing out and being seen – which has a positive impact in the long term, as these people can then be integrated into appropriate support services, thus reducing their vulnerability.

7

Practice recommendations

When evaluating the results, their significance for practice was taken into account. Based on this, recommendations for operational practice were derived, which aim to better recognise situational vulnerabilities depending on the respective crisis context in civil protection planning, to take them into account and to prevent them.

Overall, this requires a stronger focus on planning in the area of crisis and disaster risk reduction, taking into account different operational scenarios as well as the social diversity of the population. The main reason for this is that taking into account the diversity and situation-dependency of vulnerability is not feasible in practice during an ongoing operation on the part of the operational structures. Consequently, situational vulnerability should already be sufficiently considered in the planning phase. Differences between different crisis and disaster scenarios should also be taken into account in the preparatory planning and networking work with regard to the different situational vulnerabilities that arise in them.

1. Improving civil protection requires both short-term adjustments and long-term changes in social structures

Many problems that become visible during crises and disasters are rooted in everyday structures and can only be addressed to a limited extent by crisis management measures. In practice, rather short-term civil protection activities are hardly ever linked to longer-term socio-political strategies to reduce vulnerability. As socially disadvantaged people have a higher risk of finding themselves in precarious situations during crises and disasters, social inequalities need to be reduced in order to reduce vulnerability and increase resilience. The responsibility for this lies primarily with political decision-makers. On a practical level, however, closer and socio-spatially anchored cooperation between civil protection and everyday care structures can help to address the needs of particularly vulnerable people in emergency plans and ensure that they are supported to use their capacities in crisis situations. The model of a socio-spatial approach to civil protection makes a very valuable contribution in this regard, as it focuses on the social proximity of affected people and aims to use existing local resources and identify the needs of particularly vulnerable people (see Deutsches Rotes Kreuz e. V., 2018b, 2020a, 2020b; Max & Schulze, 2021).

2. Unintended side-effects of civil protection measures should be considered as potentially vulnerability-increasing

The COVID-19 pandemic, in particular, has shown that measures to cope with a crisis can also lead to increased vulnerability, e.g. because people are no longer able to activate their social networks to cope with the crisis or because they lose their jobs as a result of the measures. Even coping measures that have the best of intentions can unintentionally lead to some people suffering more harm than good as a result of them. Consequently, the measures may result in a redistribution of risks and of the damage arising from crises and disasters.

Such negative side effects will probably never be completely avoidable. It is, therefore, all the more important that an awareness of this is developed and that the benefits and risks of planned measures are carefully weighed up. In this way, it can be avoided that already existing social inequalities and structures that discriminate against individual population groups are reinforced. Targeted support strategies can help to mitigate or compensate for possible negative consequences.

One way to achieve this goal can be to involve people from as diverse a range of social backgrounds as possible in planning groups.

3. Civil protection planning should take into account the different living conditions of emergency workers and social and health workers

Civil protection is largely based on the commitment of volunteers. Their operational readiness must be ensured in an emergency. For this to happen, the different realities of life of all emergency workers must be recognised. This is the only way organisations like the German Red Cross can ensure their efficiency. An important step towards achieving this goal is the establishment of structures that can relieve aid workers of the burden of caring for children and/or relatives in need of care during a disaster, for example, and thus ensure their operational capability. Especially in view of this challenge, closer networking between civil protection and social services can offer great advantages even before a crisis event.

Emergency workers can also become vulnerable themselves, for example, because they themselves are affected by an incident or the operation is psychologically stressful. In order to be better able to deal with psychologically stressful deployment situations and one's own involvement, the expansion of psychosocial support structures should be given high priority.

Social and health workers are also essential for maintaining critical everyday structures in times of crisis. Therefore, it must also be ensured for them that their ability to work is guaranteed in the event of a disaster by establishing appropriate care structures (care for children and relatives in need of care, transport to the place of work).

4. Social capital and social cohesion are important resources

Social cohesion and social capital can help increase individual and societal resilience. Social cohesion in crises and disasters depends on the ability to work together and cooperate. Depending on the nature of the crisis, this may be easier or more difficult to implement. Moreover, social capital is unequally distributed within society. The existence of social capital in everyday life (e.g. in the form of social networks and knowledge about existing support structures) does not necessarily mean that it is also available, accessible or activatable in the actual crisis situation.

Given the enormous importance of social capital and social networking for coping with crises and disasters, these resources should be actively strengthened. This can be achieved through the targeted promotion of social networks within local communities and between different civil society actors (e.g. associations, neighbourhood meetings) at the socio-spatial level. In this context, particular attention should be given to integrating people who tend to live in isolation and have little social capital (e.g. older people) into socio-spatial networks and specifically addressing them within the implementation of coping measures.

Social capital also includes the ability to access the rescue and support system. This ability can be promoted, for example, by making emergency apps more accessible. In addition, measures can be developed to support people in activating their social capital in crisis situations. When planning civil protection, care should also be taken to ensure that access to social capital is not unnecessarily or excessively restricted or that measures are offered to compensate lost social capital.

5. Psychosocial support services should be expanded

Psychosocial well-being influences the vulnerability and resilience of people in crisis situations. Therefore, psychological and psychosocial support services are important to enable people to deal successfully with crises and disasters. They should, therefore, be taken into account in strategies and local measures of civil protection.

This finding receives particular significance in view of the long-established importance of psychosocial health for personal resilience in the face of crises and disasters (Werner,

1995). Moreover, exceptional psychological situations can have a negative effect on the ability to make appropriate decisions in a crisis or disaster (Hahad et al., 2020).

The fact that civil protection also addresses the psychosocial health of those affected and takes measures to improve it is, therefore, of great importance for successfully increasing individual resilience to the effects of crises and disasters. Although support services already exist within the framework of psychosocial emergency care for people who find themselves in a mental emergency situation in the context of crises or disasters, these care services can usually only take care of people whose affectedness is clearly recognisable. Consequently, there are not enough suitable services available for many people who would also like to make use of psychosocial help but cannot express their needs due to a lack of opportunities. Further expansion of the services and infrastructure of psychosocial emergency care and longer-term psychosocial services beyond that would help to remedy this shortage. Close exchange with social services plays an important role in this. This is especially important given the enormous psychological impact of the COVID-19 pandemic. Appropriate measures could include, for example, increasing funding for short-term psychosocial support services within civil protection structures. In addition, cooperation with help hotlines and networks, as well as contact points for therapeutic support in the long-term processing of the experience, could also be expanded.

The expansion of psychosocial support structures does not, of course, fall solely within the responsibility of civil protection, but should rather take place as part of an effort by society as a whole to expand the corresponding structures outside of crises and disasters.

6. Individual autonomy should also be taken into account in crisis and disaster situations

Even during crises and disasters, people want to act in a self-determined and informed way, which should be taken into account in the context of protective measures. This means, above all, that people should be educated about the potential risks of self-harm arising from decisions they make themselves.

People repeatedly make decisions during crises and disasters that run counter to the recommendations of civil protection (e. g. if they do not want to be evacuated during a flood). Even in such situations, the decision of adults must be respected. On the one hand, this requires adequately informing people about the consequences of their decisions and understanding their (often good) reasons for not trusting official bodies – for example, due to the stigmatisation of groups of people in previous events – not following their instructions – for example, because evacuation requests evoke traumatic evacuation experiences during World War II – or having concerns about planned measures. On the other hand, emergency services must also be enabled to recognise a lack

of risk awareness in a stressful situation or excessive demands in the sense of a (perceived) lack of alternatives. In such situations, they must, if necessary, establish incapacity to consent in persons affected and carry out measures to protect them. If necessary, also against their will.

Civil protection is faced with the difficult task of respecting people's autonomy while, at the same time, questioning the reasons for their actions and reflecting on how they can still be helped. An open social discourse on the boundaries between respect for well-informed and autonomous decisions and the legitimate demand for intervention is essential. In addition, by further developing the training of helpers, greater importance could be given to basic ethical considerations that may be relevant in such balancing situations.

7. The diversity of individual life situations should be taken into account during planning

This is especially true for communication measures in crisis situations. It is important that all members of society are considered in their planning. Warning apps are important, for example, to inform the population in a targeted manner in the event of a crisis or disaster. Therefore, they must be made more accessible to people in all conceivable life situations, and existing barriers must be removed (e.g. for people who can only read poorly, who need an option for simple language or a language other than German).

An important starting point is a greater diversification of planning bodies and task forces so that people with the most diverse socio-demographic, social and economic backgrounds and different personal biographies possible are involved in the planning and implementation of civil protection measures. In this way, different abilities and the needs of affected individuals can be better taken into account.

Excuse: Understanding vulnerability from a problem-centred perspective

For civil protection, the realisation that many factors contribute to the emergence of vulnerability means, above all, that a simple understanding of vulnerability as a constant individual characteristic often falls short and does not sufficiently capture the actual complexity of the emergence of situational vulnerability. Accordingly, a situational understanding of vulnerability should be developed that places its focus primarily on the personal challenges and problems that affected persons may face in a disaster, in order to better identify persons with special support needs.

According to this problem-oriented approach, those who have no access to or do not understand information are particularly vulnerable. Be it due to a lack of, or insufficient,

ability to hear, a lack of language skills or a lack of reception equipment. This initially includes all persons whose communication options are not addressed by the communication activities of civil protection and government agencies. If one refines the distinction within these groups further and, at the same time, checks to what extent these challenges are taken into account in the planning, vulnerable groups of people can be identified. From a socio-economic point of view and with regard to their personal backgrounds, these may be highly diverse in composition, but nevertheless, require the same or at least similar assistance. This perspective can, therefore, help with emergency planning, as it allows groups to be formed in accordance with actual needs for help, rather than focusing on membership of a social group (e.g. the elderly).

The application of a problem-oriented approach in the planning of civil protection operations would, on the one hand, also help to take into account the situation-dependent and dynamic characteristics of vulnerability. A non-German speaking person is linguistically vulnerable only as long as their other language skills are not addressed. If this problem is successfully identified as the source of his or her vulnerability and addressed by translating critical information into a language he or she understands, situational vulnerability can be eliminated with relatively little effort.

Such a problem-oriented perspective also aims at empowering people to help themselves as much as possible in order to relieve the burden on civil protection organisations. Correctly identifying the problems faced by individuals opens up the possibility of using support structures more efficiently and enables affected individuals to act more independently.

8

Conclusion and outlook

The comparison of past floods and the current COVID-19 pandemic in the Dresden region, conducted as part of the BuildERS case study, has shown that vulnerability and resilience should be understood as dynamic and situational. This is the case because they depend on the particular problems, challenges and coping capacities available to individuals and are triggered by a specific disaster.

Failure to take situational differences into account can lead to vulnerabilities being overlooked, possibly exacerbated by crisis and disaster management measures, or even produced in the first place. The lessons learnt in the case study should, therefore, be used to empower emergency workers to develop sensitivity to situational vulnerability and to implement resilience-building measures that reach as wide a section of the population as possible and avoid potential negative side-effects as much as possible. Based on the results of the case study, practical recommendations were presented. These recommendations are primarily intended as food for thought and are aimed at individual and organisational civil protection actors, political decision-makers and all other stakeholders who can contribute to achieving these objectives.

This can be attained by taking greater account of social diversity in the development and implementation of measures. Openness to new situations and critical reflection on established approaches are important prerequisites for better recognising the diverse situational manifestations of vulnerability and adapting measures more effectively to current and situational needs. To this end, it is also important to make the structures of civil protection more inclusive and to promote greater cooperation with everyday support structures, especially from the social and health sectors.

Due to the complexity of our society, the diversity of existing needs and the unpredictable dynamics of crises and disasters, it is necessary that measures in civil protection include social aspects of crisis management in the sense of a long-term perspective and in anticipation of future crises and disasters. This can be promoted through a situational and problem-centred understanding of vulnerability. At the same time, measures need to be continuously reviewed, in order to adapt to constantly changing social conditions and different crises and disasters. Particularly in view of the expected further increase and intensification of crises and disasters due to advancing climate change and the associated probability of the occurrence of previously unknown scenarios, on the one hand, and in view of continuous social change processes, on the other, a stronger focus on situational vulnerabilities seems urgently required.

9

References

- Aldrich, D. P. (2012). *Building resilience: Social capital in post-disaster recovery*. University of Chicago Press.
- Aldrich, D. P. & Meyer, M. A. (2015). Social Capital and Community Resilience. *American Behavioral Scientist*, 59(2), 254–269. <https://doi.org/10.1177/0002764214550299>
- Alexander, D. E. (2013). Resilience and disaster risk reduction: an etymological journey. *Natural Hazards and Earth System Sciences*, 13(11), 2707–2716. <https://doi.org/10.5194/nhess-13-2707-2013>
- Bourdieu, P. (1997). The forms of capital. In A. H. Halsey (Ed.), *Education: Culture, economy, and society* (pp. 46–58). Oxford Univ. Press.
- Bundesministerium für Gesundheit. (2021, April 30). Aktueller Impfstatus: Wie ist der Fortschritt der COVID-19-Impfung? April 30, 2021, <https://impfdashboard.de/>
- Deutsche Feuerwehrzeitung. (2013, July 31). Hochwasser: größter Hochwassereinsatz der Bundesrepublik. https://www.feuerwehrverband.de/app/uploads/2020/05/DFZ_2013_07.pdf
- Deutsches Komitee für Katastrophenvorsorge. (2003). Hochwasservorsorge in Deutschland. Lernen aus der Katastrophe 2002 im Elbegebiet (Schriftenreihe des DKKV No. 29). https://www.dkkv.org/fileadmin/user_upload/Veroeffentlichungen/Publikationen/DKKV_29_Lessons_Learned_Kurzfassung.pdf
- Deutsches Komitee Katastrophenvorsorge. (2015). Das Hochwasser im Juni 2013: Bewährungsprobe für das Hochwasserrisikomanagement in Deutschland (Schriftenreihe des DKKV No. 53). https://www.dkkv.org/fileadmin/user_upload/Veroeffentlichungen/Publikationen/DKKV_53_Hochwasser_Juni_2013.pdf
- Deutsches Rotes Kreuz e. V. (2014a). *Der Resilienz-Ansatz des Deutschen Roten Kreuzes: Stärkung der Resilienz durch die internationale Zusammenarbeit des DRK*. Berlin. <https://silo.tips/download/der-resilienz-ansatz-des-deutschen-roten-kreuzes-strkung-der-resilienz-durch-die>
- Deutsches Rotes Kreuz e. V. (2014b). *Die Rolle ungebundener Helferinnen und Helfer bei der Bewältigung von Schadensereignissen: Teil 1. Untersuchungen am Beispiel Hochwasser 2013 in Sachsen. (Schriften der Forschung No. 1)*. Berlin. <https://www.drk.de/forschung/schriftenreihe/schriften-der-forschung-band-i/broschueren-downloaden/>

Deutsches Rotes Kreuz e. V. (2017). Stärkung von Resilienz durch den Betreuungsdienst: Teil 1: Wissenschaftliche Erkenntnisse zu Bedingungen für einen zukunftsfähigen DRK-Betreuungsdienst (Schriften der Forschung No. 4). Berlin. <https://www.drk.de/forschung/schriftenreihe/schriften-der-forschung-band-iv/broschueren-downloaden/>

Deutsches Rotes Kreuz e. V. (2018a). Stärkung von Resilienz durch den Betreuungsdienst: Teil 4: Empfehlungen für einen zukunftsfähigen DRK-Betreuungsdienst: Vernetzung (Schriften der Forschung No. 4). Berlin. <https://www.drk.de/forschung/schriftenreihe/schriften-der-forschung-band-iv/broschueren-downloaden/>

Deutsches Rotes Kreuz e. V. (2018b). Die vulnerable Gruppe „ältere und pflegebedürftige Menschen“ in Krisen, Großschadenslagen und Katastrophen.: Teil 2: Vernetzung und Partizipation – auf dem Weg zu einem sozialraumorientierten Bevölkerungsschutz (Schriften der Forschung No. 6). Berlin. https://www.drk.de/fileadmin/user_upload/Forschung/schriftenreihe/Band_6/Band_VI_Teil_2.pdf

Deutsches Rotes Kreuz e. V. (2018c). Die vulnerable Gruppe „ältere und pflegebedürftige Menschen“ in Krisen, Großschadenslagen und Katastrophen: Teil 1: Wissenschaftliche Erkenntnisse und Herausforderungen aus der Praxis (Schriften der Forschung No. 6). Berlin. https://www.drk.de/fileadmin/user_upload/Forschung/schriftenreihe/Band_6/Schriften_der_Forschung_6.1._Wissenschaftliche_Erkenntnisse_und_Herausforderung_aus_der_Praxis.pdf

Deutsches Rotes Kreuz e. V. (2018d). Web 2.0 und Soziale Medien im Bevölkerungsschutz: Teil 1: Wissenschaftliche Erkenntnisse über die Nutzung von Sozialen Medien in Krisen- und Katastrophenlagen aus Perspektive des Deutschen Roten Kreuzes (Schriften der Forschung No. 5). Berlin. <https://www.drk.de/forschung/schriftenreihe/schriften-der-forschung-band-v/broschueren-downloaden/>

Deutsches Rotes Kreuz e. V. (2020a). Resiliente Nachbarschaften: Teil 1: Wissenschaftliche Erkenntnisse zu sozialem Zusammenhalt und Nachbarschaftshilfe in Krisen und Katastrophen (Schriften der Forschung No. 8). Berlin. <https://www.drk.de/forschung/schriften-der-forschung-band-viii/broschueren-downloaden/>

Deutsches Rotes Kreuz e. V. (2020b). Resiliente Nachbarschaften: Teil 2: Pilot-Konzept zur Stärkung von Vernetzung und Katastrophenvorsorge im Sozialraum (Schriften der Forschung No. 8). Berlin. <https://www.drk.de/forschung/schriften-der-forschung-band-viii/broschueren-downloaden/>

Freistaat Sachsen. (2021a, April 30). Amtliche Bekanntmachungen: Coronavirus in Sachsen. Retrieved April 30, 2021, from <https://impfdashboard.de/https://www.coronavirus.sachsen.de/amtliche-bekanntmachungen.html>

Freistaat Sachsen. (2021b, April 30). Infektionsfälle in Sachsen: Coronavirus in Sachsen. Retrieved April 30, 2021, from https://www.coronavirus.sachsen.de/infektionsfaelle-in-sachsen-4151.html?_cp=%7B%7D

Gabel, F. (2019). 4. Chancen dynamischer Konzeptionen von Vulnerabilität für den Katastrophenschutz. In M. Krüger & M. Max (Eds.), *Gesellschaft der Unterschiede. Resilienz im Katastrophenfall* (Vol. 46, pp. 77–96). transcript Verlag.
<https://doi.org/10.14361/9783839444887-008>

Gabel, F., & Krüger, M. (2021). 6. Exkurs: Vulnerabilität. In M. Max & M. Schulze (Eds.), *Hilfeleistungssysteme der Zukunft* (pp. 107–114). transcript Verlag.
<https://doi.org/10.14361/9783839460320-012>

Gaede, K. (2021, July 22). Was die Flutkatastrophe für die Pflege bedeutet. *Pflegen-Online.De*. Retrieved February 14, 2022, from <https://www.pflegen-online.de/was-die-flutkatastrophe-fuer-die-pflege-bedeutet>

Garnezy, N. (1973). Competence and adaptation in adult schizophrenic patients and children at risk. In S. R. Dean (Ed.), *Schizophrenia: The first ten Dean Award Lectures*. (pp. 163–204). MSS Information Corp.

Hahad, O., Gilan, D. A., Daiber, A., & Münzel, T. (2020). Bevölkerungsbezogene psychische Gesundheit als Schlüsselfaktor im Umgang mit COVID-19 [Public Mental Health as One of the Key Factors in Dealing with COVID-19]. *Gesundheitswesen (Bundesverband der Ärzte des Öffentlichen Gesundheitsdienstes (Germany))*, 82(5), 389–391.
<https://doi.org/10.1055/a-1160-5770>

Hilhorst, D., & Bankoff, G. (2010). Introduction:: Mapping Vulnerability. In G. Bankoff, G. Frerks, & D. Hilhorst (Eds.), *Mapping vulnerability: Disasters, development, and people* (pp. 1–9). Earthscan Publications.

Holling, C. S. (1973). Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics*, 4(1), 1–23. <https://doi.org/10.1146/annurev.es.04.110173.000245>

Horn, E. (2014). *Zukunft als Katastrophe*. Fischer.

Hövermann, A. (2020). Soziale Lebenslagen, soziale Ungleichheit und Corona - Auswirkungen für Erwerbstätige: Eine Auswertung der HBS-Erwerbstätigenbefragung im April 2020 (WSI Policy Brief No. 44). Düsseldorf: Hans-Böckler-Stiftung, Wirtschafts- und Sozialwissenschaftliches Institut (WSI). <https://www.econstor.eu/handle/10419/224252>

Issing, P., Thomas, I. C., Meyer, S., Heitkamp, S., Mitic, K., Khunkham, K., & Rottmann, K. (2013, June 5). Sachsen rechnet mit Milliarden Schäden: Hochwasser-Protokoll. Welt. <https://www.welt.de/vermischtes/article116822923/Sachsen-rechnet-mit-Milliarden-schaeden.html>

Kirchbach, H. P., Franke, S., & Biele, S. (2002). Bericht der unabhängigen Kommission der Sächsischen Staatsregierung: Flutkatastrophe 2002. <https://publikationen.sachsen.de/bdb/artikel/10825/documents/10951>

Max, M., & Schulze, M. (Eds.). (2021). Hilfeleistungssysteme der Zukunft. transcript Verlag. <https://doi.org/10.14361/9783839460320>

McNamara, C. L., McKee, M., & Stuckler, D. (2021). Precarious employment and health in the context of COVID-19: A rapid scoping umbrella review. *European Journal of Public Health*, 31(Supplement_4), iv40-iv49. <https://doi.org/10.1093/eurpub/ckab159>

MDR. (2021, March 02). Rückblick: Ein Jahr Corona-Pandemie in Sachsen. Retrieved April 30, 2021 from <https://www.mdr.de/nachrichten/sachsen/corona-virus-sachsen-chronik-rueckblick-100.html>

Orru, K., Hansson, S., Gabel, F., Tammpuu, P., Krüger, M., Savadori, L., Meyer, S. F., Torpan, S., Jukarainen, P., Schieffeler, A., Lovasz, G., & Rhinard, M. (2021). Approaches to 'vulnerability' in eight European disaster management systems. *Disasters*. Advance online publication. <https://doi.org/10.1111/disa.12481>.

Reiter, J., Lorenz, D. F., Dittmer, C., & Voss, M. (2017). Exkurs: Vulnerabilität aus der Perspektive der sozialwissenschaftlichen Katastrophenforschung. In *Stärkung von Resilienz durch den Betreuungsdienst: Teil 1: Wissenschaftliche Erkenntnisse zu Bedingungen für einen zukunftsfähigen DRK-Betreuungsdienst* (Schriften der Forschung No. 4, pp. 22–24). Berlin. <https://www.drk.de/forschung/schriftenreihe/schriften-der-forschung-band-iv/broschueren-downloaden/>

Sächsische Staatskanzlei (Ed.). (2013). Bericht der Kommission der Sächsischen Staatsregierung zur Untersuchung der Flutkatastrophe 2013. <https://publikationen.sachsen.de/bdb/artikel/20534/documents/27496>

Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie. (2022, June 24). Überschwemmte Flächen im Freistaat Sachsen: Hochwasser August 2002 und Juni 2013. <https://www.wasser.sachsen.de/ueberschwemmte-flaechen-hochwasser-2002-und-2013-11837.html#a-11876>

Staatsbetrieb Geobasisinformation und Vermessung Sachsen. (2022, June 24). Basis-karte Sachsen. <https://www.wasser.sachsen.de/ueberschwemmte-flaechen-hochwasser-2002-und-2013-11837.html#a-11876>

Technisches Hilfswerk. (2013). Flusshochwasser 2013: Alle Einsätze sind abgeschlossen. https://www.thw.de/SharedDocs/Downloads/DE/Mediathek/Dokumente/Presse/Pressemitteilungen/2013/07/download_012_pressemitteilung_hochwasser-13.pdf;jsessionid=9152BF242B488E1A58F9318D139ED9EA.1_cid379?__blob=publicationFile

Tierney, K. J. (2019). *Disasters: A sociological approach*. Polity.

Undine. (2002). Hochwasserereignisse im Elbegebiet: Das Sommerhochwasser 2002. http://undine.bafg.de/elbe/extremereignisse/elbe_hw2002.html

Undine. (2006). Hochwasserereignisse im Elbegebiet: Das Frühjahrshochwasser 2006. https://undine.bafg.de/elbe/extremereignisse/elbe_hw2006.html

UNDRR. (2015). Sendai Framework for Disaster Risk Reduction 2015 - 2030. https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

UNESCO. (2020, November 27). International Day for the Elimination of Violence against Women. UNESCO. <https://www.unesco.org/en/articles/international-day-elimination-violence-against-women-1>

Werner, E. E. (1995). Resilience in Development. *Current Directions in Psychological Science*, 4(3), 81–84. <https://doi.org/10.1111/1467-8721.ep10772327>

Wochenspiegel (2021, July 15). Ehrang teils überflutet, Klinikum evakuiert: Keine Gefahr für Patienten und Mitarbeiter, 2021. <https://www.wochenspiegellive.de/trier/stadt-trier/artikel/ehrang-teils-ueberflutet-klinikum-evakuiert-70951/>

ZDF (2021, July 16). Fluten in Sinzig: Zwölf Tote in Heim für Beeinträchtigte. <https://www.zdf.de/nachrichten/panorama/hochwasser-wohnheim-behinderung-tote-sinzig-100.html>

Zimmermann, R., Sarma, N., Thieme-Thörel, D., Alpers, K., Artelt, T., Azouagh, K., Bremer, V., Broistedt, P., Eckmanns, T., Feltgen, N., Huska, M., Kröger, S., Puls, A., Scheithauer, S., Mayr, E., & Rexroth, U. (2021). Covid-19 Outbreaks in Settings With Precarious Housing Conditions in Germany: Challenges and Lessons Learned. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.708694>

10

List of Figures and Tables

Figure 1:	Areas flooded in the city centre of Dresden in 2002 (LfULG & GeoSN)	20
Figure 2:	Development of 7-day COVID-19 incidence in Saxony (Freistaat Sachsen)	21
Figure 3:	Deployment of psychosocial emergency care measures by the German Red Cross in the Ahr valley (Müller and DRK e. V.)	29

11

For quick readers

The eleventh volume of the research publication series focuses on the influence of social factors and situational differences between different crises and disasters on the emergence of situational vulnerability. In particular, it raises the question of how civil protection can use its limited resources as effectively as possible to support particularly vulnerable people in the face of widely differing levels of affectedness, in order to strengthen the resilience of society as a whole. The findings presented in this volume come from a case study of the Dresden metropolitan region, which used expert interviews and an online survey to examine the floods of 2002, 2006 and 2013, as well as the still ongoing COVID-19 pandemic.

After an overview of the BuildERS research project on which the case study is based, the central concepts of vulnerability, resilience and social capital are explained. The relevance of the research project for the work of the German Red Cross is then explained, and an overview of the flood situations studied and the development of the COVID-19 pandemic in the Free State of Saxony during the study period is given. The research publication series summarises the central findings of the case study and presents the following practical recommendations for the civil protection of the future:

- Improving civil protection requires both short-term adjustments and long-term changes in social structures, for example, in the context of a socio-spatial approach to civil protection.
- Unintended side effects of civil protection measures should be reflected as potentially increasing vulnerability.
- Civil protection planning should take into account the different circumstances of emergency workers and social and health workers.
- Social capital and social cohesion are important resources that should be taken into account depending on the situation, especially since they are not always accessible to those affected.
- It is important to expand psychosocial support services, especially with regard to the long-term care of those affected.
- Individual autonomy should also be taken into account in crisis and disaster situations.
- The diversity of individual life situations should be taken into account in the planning, and the resulting different needs for assistance should be considered in the planning. For example, crisis communication should be as accessible as possible for all people.

Also available in English:

The Vulnerable Group “the Elderly and those Needing Care” during Crises, Large-scale Emergencies, and Disasters

Findings and Possible Solutions – Moving toward a Socio-spatial Approach to Civil Protection

Strengthening of Community Resilience – The German Red Cross Disaster Services

Recommendations for Action Based on Research Results

Cooperation with civil society actors

Findings from the GRC-refugee assistance 2015/16 in Germany

Networking and cooperation in times of crises

Good Practices and Lessons Learned from the GRC-refugee assistance 2015/16

German Red Cross

Carstennstraße 58
12205 Berlin
Germany
www.drk.de

© 2022 Deutsches Rotes Kreuz e. V., Berlin



Funded by the
European Union

