



The 2013 Flood in the Community of Elbe-Havel-Land in the Eyes of the Population

Research Report of the Quantitative Survey

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Abstract

During the 2013 European floods, the municipalities of the Elbe-Havel-Land in Saxony-Anhalt, Germany, were flooded after the water masses of the Elbe River caused a dike to break; houses, streets and plots of land were destroyed. This report, based on the results of a quantitative survey carried out three years after the event, shines light on the effects of the 2013 Flood, and how well, according to the perception of residents, the disaster has been dealt with. Based on personally experienced material and immaterial impacts and on the state of psychological recuperation, we highlight the need for further support needed, identify what kinds of aid have been missing, and illustrate the relative importance of different actors throughout the disaster. The results indicate that the need for assistance varies especially with regard to time, that after-effects continued to linger at the time of questioning, and that accordingly there is a continued need for support.

Keywords: 2013 European floods, quantitative survey, need for support, impact on living conditions

Zusammenfassung

Im Sommer 2013 wurde die Verbandsgemeinde Elbe-Havel-Land in Sachsen-Anhalt während des Elbehochwassers nach einem Deichbruch weiträumig überflutet: Häuser, Straßen und Grundstücke wurden zerstört. Der Bericht beleuchtet die Folgen des Hochwassers 2013 und ihre Bewältigung aus Sicht der Bewohner*innen, basierend auf Ergebnissen einer quantitativen Bevölkerungsbefragung drei Jahre nach dem Ereignis. Ausgehend von erlebten materiellen und immateriellen Auswirkungen und dem Stand der Verarbeitung des Ereignisses, wird der Bedarf an Unterstützung aufgezeigt, fehlende Hilfeleistungen identifiziert und die Bedeutung verschiedener Akteure im Verlauf der Katastrophe dargestellt. Dabei zeigen sich insbesondere zeitliche Variationen der Hilfebedarfe und ein anhaltender Bedarf an Unterstützung sowie Nachwirkungen des Ereignisses bis zum Zeitpunkt der Befragung.

Schlüsselwörter: Hochwasser 2013; quantitative Bevölkerungsbefragung, Unterstützungsbedarf; Auswirkung auf Lebensumstände

1. Introduction

On June 10 in Fischbeck, during the 2013 Elbe flood, a dike broke causing flooding in many of the surrounding areas within the Elbe-Havel-Land municipality – a rural, low-population area east of the Elbe River in Saxony-Anhalt, Germany. Although numerous areas were completely cut off from the outside world, many residents ignored the government evacuation order, attempting instead to save their possessions (Dittmer et al. 2016). In some instances, help through disaster management organizations such as the Federal Agency for Technical Relief (THW), the German Red Cross (DRK), the Johanniter (JUH), or the German military, did only arrive after two weeks. Other residents, who had followed the evacuation order and were staying in private housing or emergency shelters in Stendal, Jerichow, or Havelberg, began to return to their, at times uninhabitable, homes after a few weeks. A few of the aid organizations stayed through the end of 2016, assisting with legal matters or psychosocial support. Three years after the flooding, the period of material and psychological recovery is far from complete for many residents, in particular for those who were most affected (Dittmer et. al 2016).

Within the framework of the project INVOLVE¹, the Disaster Research Unit conducted a qualitative and quantitative field study in the affected areas using expert interviews, interviews with affected residents, stakeholder workshops, group discussions, and a quantitative population survey. The project focused on gathering information regarding the population's needs and self-help potential during a disaster, in order to enable more effective responses in future disastrous situations. For this reason, particulars regarding resident's living conditions before, during, and after the disaster were surveyed. Further, residents were asked questions regarding the help they had needed and received as well as the value of social networks. Responses gathered through expert interviews with members of aid organizations as well as through stakeholder workshops show, how disaster management professionals perceived the situation.

This report primarily includes descriptive results from the quantitative survey. Further results, particularly those with a qualitative focus, can be found in Dittmer et al. (2016), Reiter et al. (2017), and Wenzel et al. (2016) as well as in a variety of articles printed in the local newspaper, "Volksstimme".

This report begins with a short overview of the data collection methods and the sample composition (chapter 2). To provide broad insight into the disaster, its impact is illustrated through the residents' perspectives (chapter 3). The extent to which the disaster was and continues to be processed three years after its occurrence is delineated in chapter 4, followed by a description of the concrete needs of the affected (chapter 5), what kinds of support were lacking (chapter 6), and which resources were most useful (chapter 7). Chapters 8 and 9 analyze how the support of government agencies and aid organizations, and help from the local populace respectively, were perceived and evaluated, and the effects of such experiences. Chapter 10 focuses on the use of volunteer engagement for the overcoming of disasters. Chapter 11 provides insight into preventative behavior and measures of the populace in the context of the 2013 floods and in consideration of current estimates. Chapter 12 summarizes the results.

¹ In addition to the Disaster Research Unit (DRU), the research group *Intercultural and Complex Working Worlds* (FINKA) of the University of Jena and the German Red Cross (DRK) participated in this project. For more information, please visit www.involve-project.com.

2. Data Collection and Sample Composition

The quantitative survey took place three years after the event, from July until October 2016. Around 1500 surveys were distributed with the help of students who employed the random route method within the municipality. The surveys could be returned via the postal service. In addition, 60 households were personally surveyed in the field. In addition, the questionnaire could also be filled in online. The target group for the survey included all residents in the municipality over 18 years of age. The response rate was comparably high at 17percent. Following the data cleansing process, 255 datasets could be evaluated.

Figure 1 shows the responses distributed across the municipalities. The sample is evenly distributed across the municipalities, although a higher response rate was recorded in the most affected areas.

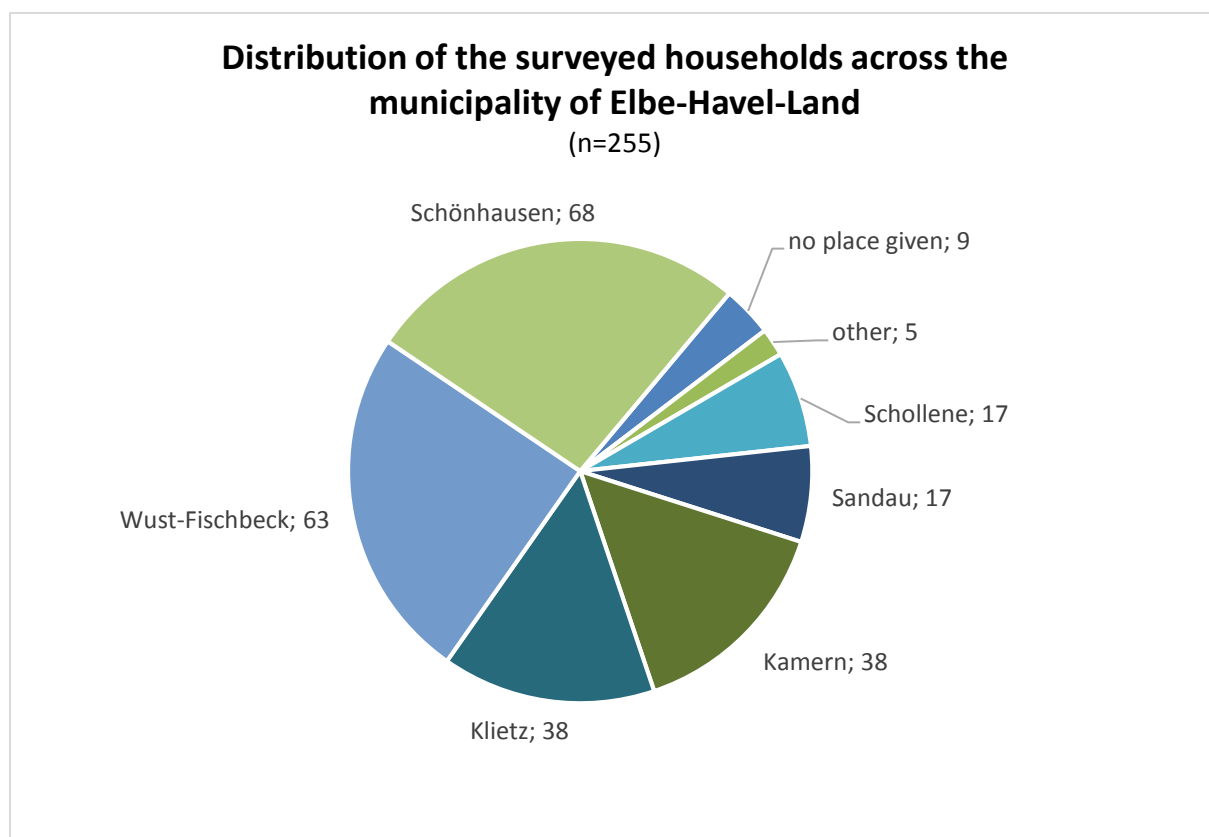


Figure 1: Distribution of the surveyed households across the towns and villages in the municipality of Elbe-Havel-Land

The sample depicts all age groups over 18 years. The average age was 56. A comparison of the age groups represented in the sample and those in the population shows that older people (50 to >80) are overrepresented and that the younger age groups (20-29 and 40-49) are underrepresented. The age distribution is also reflected in the disproportionate representation of childless two-person households as compared to single-person households and households with children.

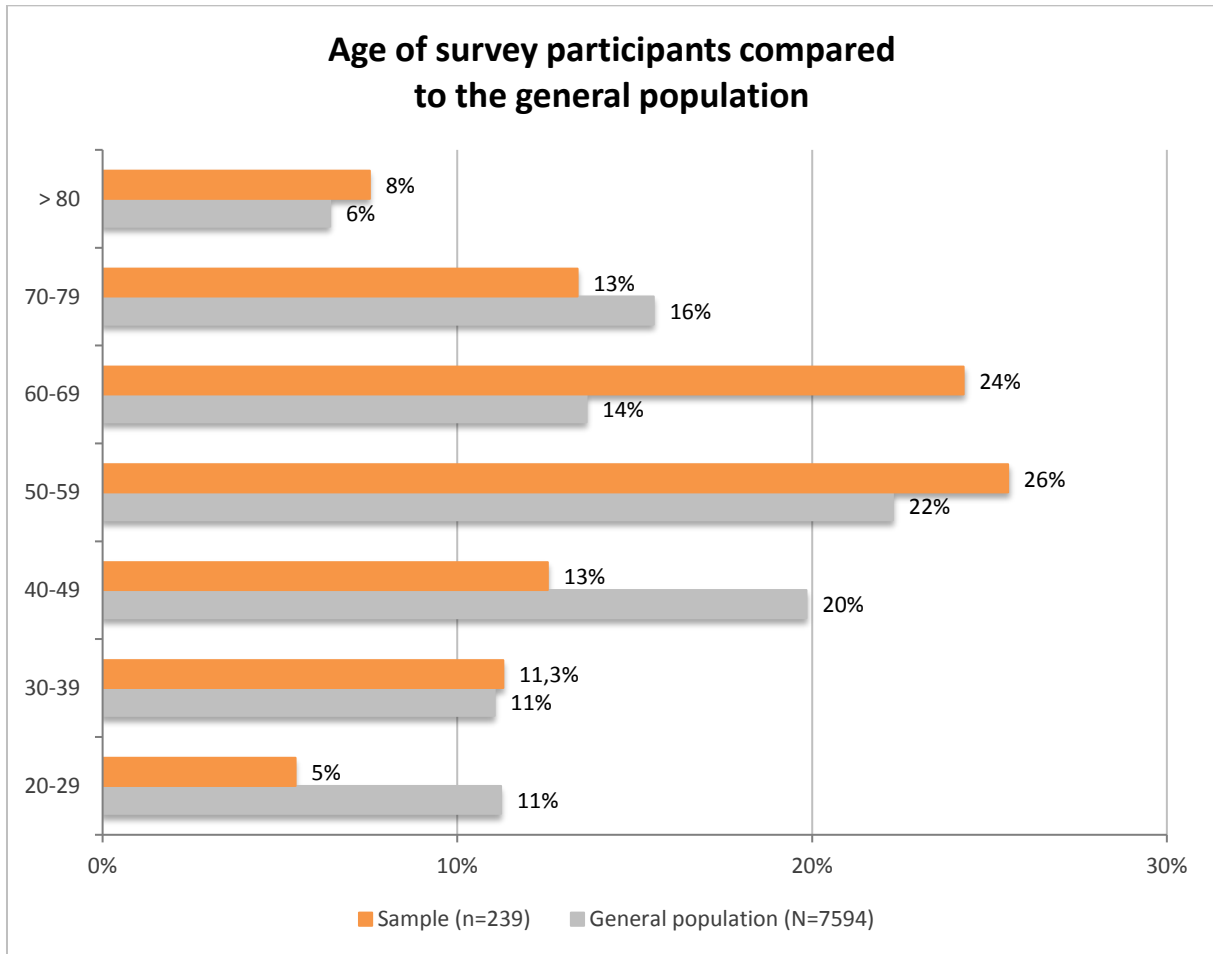


Figure 2: Age of survey participants compared to the general population
 (Source: State Statistical Office of Saxony-Anhalt 2014)

Moreover, more women (60 percent) than men (40 percent) filled out the survey, while, according to data provided by the State Statistical Office of Saxony-Anhalt (2014), the sex ratio in the municipalities is relatively balanced; women make up 49 percent and men make up 51 percent of the population.

There are no comparative population statistics on the municipal level concerning education levels and economic status. Almost half of those surveyed named vocational training as their highest level of professional training. This was followed by individuals with a college or university degree (18 percent), tradesman’s certificate (15 percent), and a university of applied sciences or engineering degree (15 percent) (figure 3).

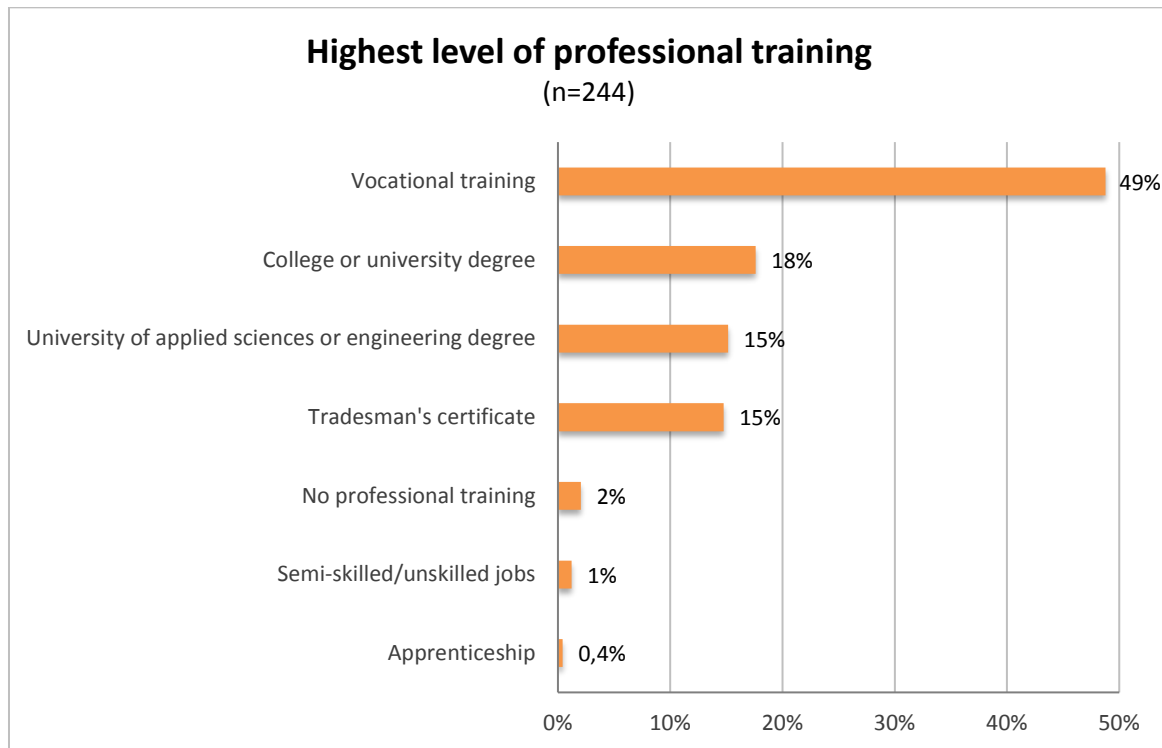


Figure 3: Highest level of professional training

Regarding employment status, individuals with full-time employment (38 percent) and retirees (33 percent) are the most represented within the sample (figure 4).

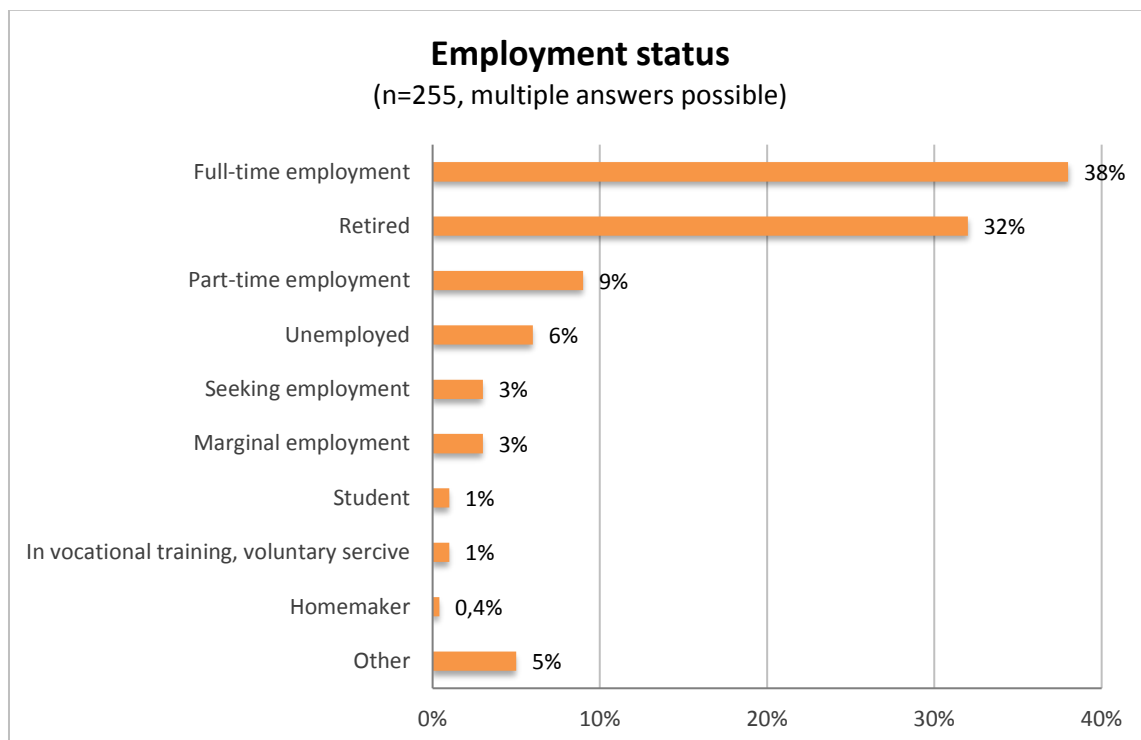


Figure 4: Employment status

The question regarding monthly household income (net income including tax and social security deductions, figure 5) was answered by approximately 85 percent of those surveyed. The vast majority fell into the income categories for those earning between 1000 and 3000 Euros per month. Around 16 percent of households had access to less than 1000 Euros per month. Less than three percent of those surveyed had an income above 5000 Euros per month.

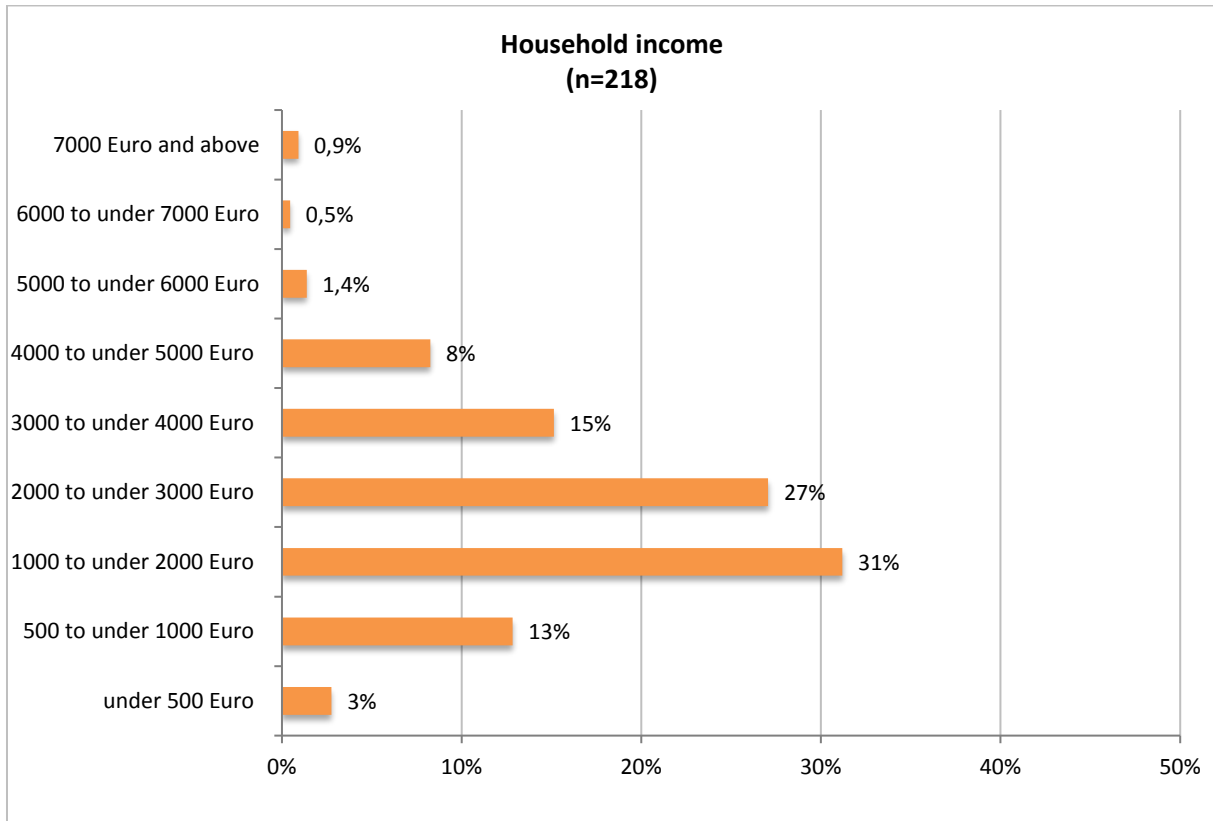


Figure 5: Household income

3. The Impact of the Flood and its Subjective Assessment

The gravity of a disaster like the 2013 flooding is often measured in terms of the total cost of damages. Pending a final assessment, estimates for the flooding damages in the most affected area in Saxony-Anhalt are between 1.5 and 2 billion Euros (2013 estimate; federal state government of Saxony-Anhalt 2014). These numbers include direct damages to civilians, businesses, and government infrastructure. For the affected residents, however, impacts extend far beyond these numbers and vary tremendously, ranging from an inadequate supply of provisions to extraordinary physical burdens and long-term health implications. These impacts are often neither visible nor individually quantifiable. In order to create a more comprehensive image of a disaster, this study raised questions surrounding not only material and financial damages, but also non-material impacts. At the same time, the surveyed were asked to assess the perceived severity of individual impacts in their responses.

The distribution of material and financial damages (figure 6) shows that property (49 percent) and basements (46 percent) suffered the highest damages. Around 23 percent of survey participants stated that their homes had been affected. Damage to additional private property included destruction of green spaces, additional homes, and other buildings such as barns, stables, garages, and sheds. The material damages occurred at various times – as a direct result of the flooding, after the flood receded, or as long-term consequences lasting until the time the survey was conducted (e.g. structural sagging, cracks in walls, foundational damage, mold, faulty power supply lines, damages to heating units). Eighteen percent of the surveyed identified damages in the form of loss of agricultural commodities and animals. This includes household animals (pets and farm animals for private use) as well as stocks in food and supplies in private households.

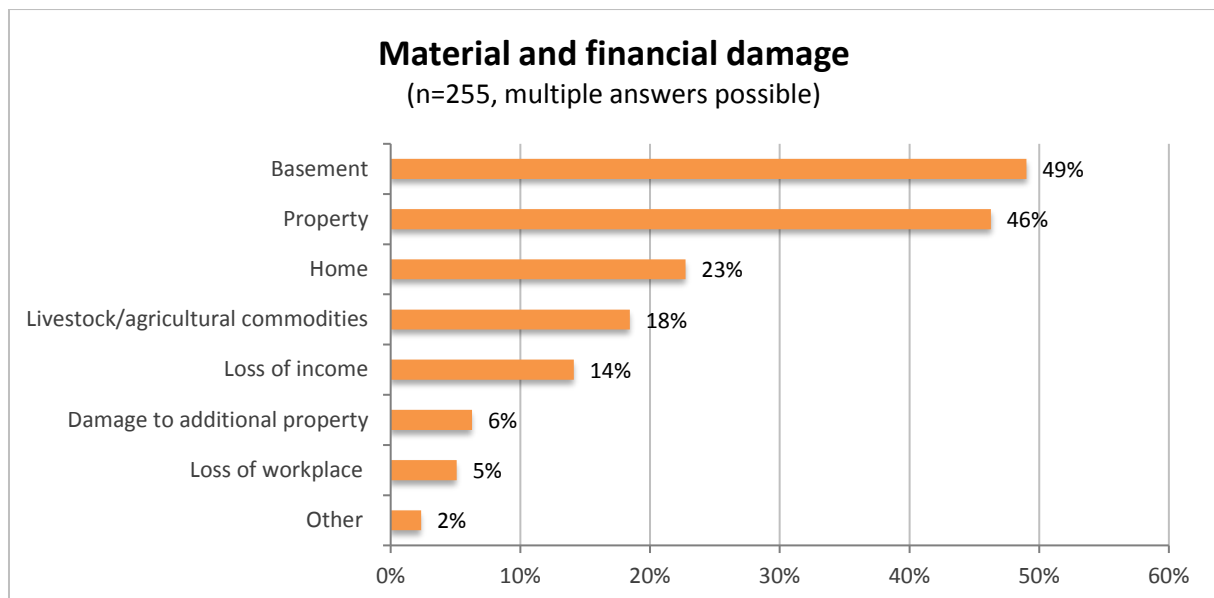


Figure 6: Distribution of material and financial damage

Figure 7 depicts various intangible consequences and their distribution across the sample. Psychological strain is of particular relevance, affecting 62 percent of the surveyed. This encompasses fear for one’s own life, concern for fellow humans, uncertainty and helplessness, tension, and worries regarding house and home. Overall, far more individuals experienced psychological strain than direct material damages. Further, reduced mobility and access to provisions (47 percent) as well as health related effects were identified. While difficulties related to access to provisions were rectified quickly as the water receded, psychological and physical health problems often emerged with a significant time delay. The flooding led to long-term health problems for around ten percent of those surveyed.

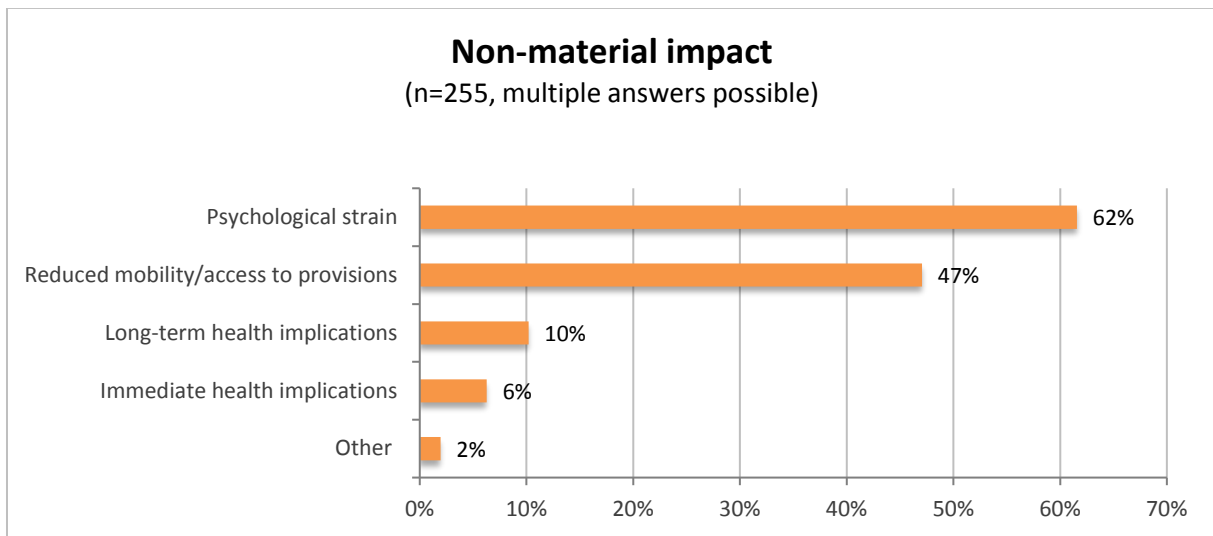


Figure 7: Non-material impact

Figure 8 shows how the affected experienced and evaluated these impacts. Sixty-one percent of those surveyed assessed psychological impacts as bad or very bad. Fifty-seven percent of those surveyed indicated that the material damages were bad or very bad.

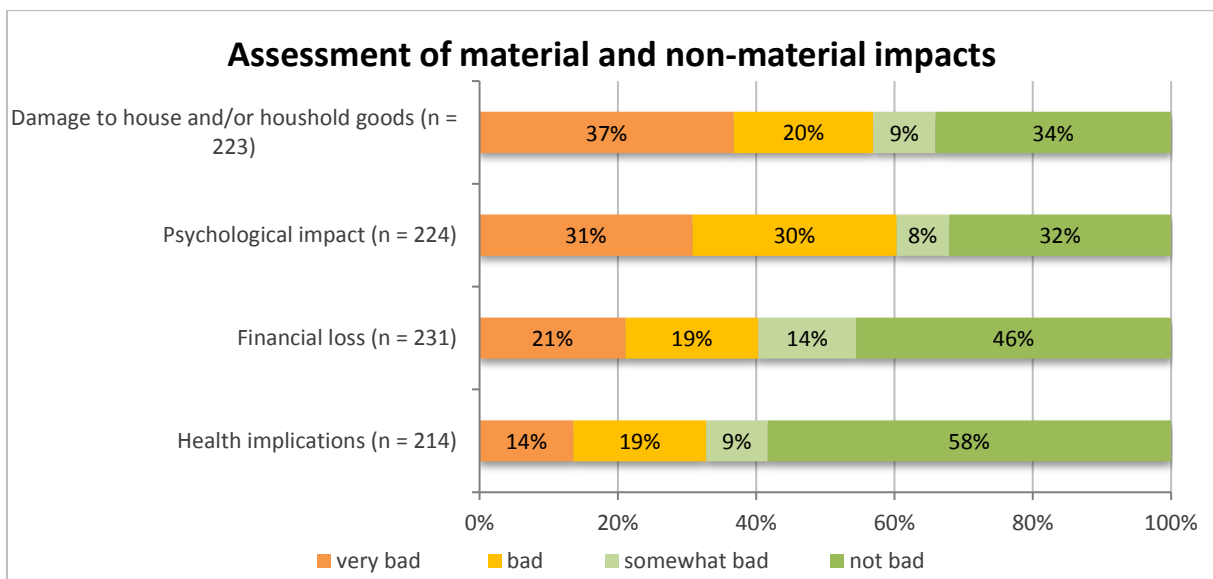


Figure 8: Assessment of material and non-material impacts

4. Coping and Processing Three Years after the Event

Coping with an extreme event such as the 2013 flooding represents a tremendous challenge that must be dealt with over a long period of time. In order to measure the status of residents' ability to cope, information regarding personal agency, the return to daily life, and the emotional processing of the event was collected.

Within the framework of the survey, 39 percent of the surveyed reported a partial or complete inability to successfully cope with the event using their "own resources" (figure 9).

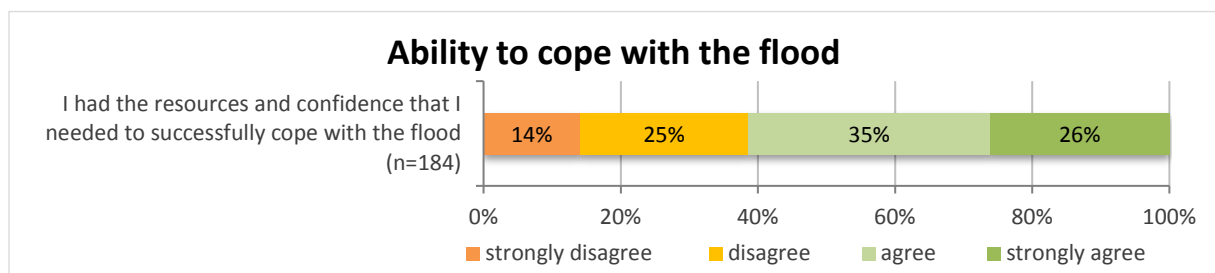


Figure 9: Ability to cope with the flood

While the vast majority of those surveyed (90 percent) characterized their own daily lives as "normalized" at the time of the survey, ten percent of those surveyed disagreed or strongly disagreed. A return to daily life, however, does not necessarily mean that the event has been fully processed on an emotional level. In this regard, 29 percent of the surveyed reported that thinking about the flooding and loss was somewhat difficult or very difficult (figure 10).

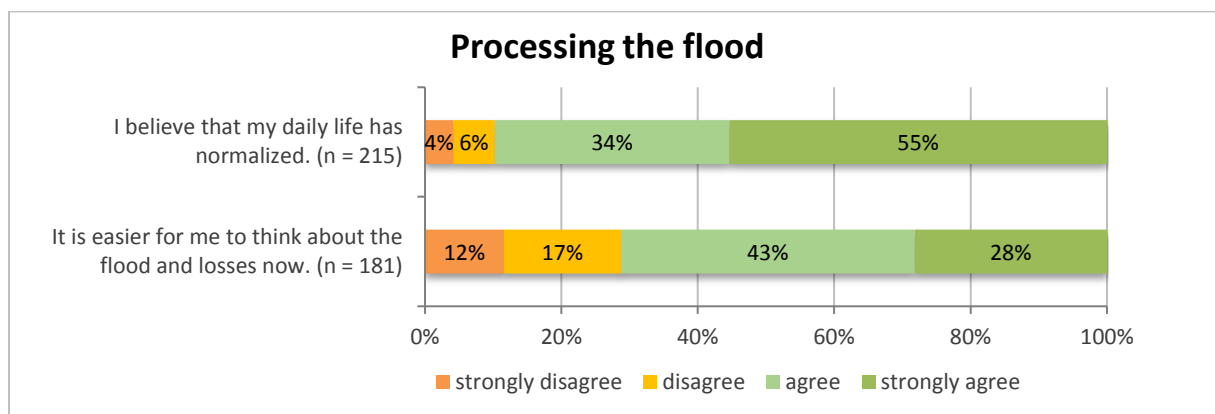


Figure 10: Processing the flood

Noteworthy during the execution of the personal surveys, was that nearly one-third of the individuals who were spoken with directly, declined to participate, explicitly citing an unwillingness and inability to discuss the events. In evaluating the results, one must thus assume that the responses do not adequately reflect the population, as the number of individuals who experienced a significant emotional strain are underrepresented in the study.²

² This does not only apply to the current study. It is generally the case that there is a significant difference between the damages recorded in statistics and surveys and the actual damages.

5. Need for Assistance during and after the Flooding

One of the largest challenges for disaster management organizations is providing adequate assistance for the affected individuals. These organizations must make decisions quickly, often before they have the opportunity to assess the situation thoroughly. The provided assistance encompasses the evacuation and housing of affected individuals as well as supplying provisions such as food and clothing both during and after the event. In order to better understand the actual needs of the affected, data was collected regarding the extent to which various forms of support were needed throughout the disaster. These questions focused on the categories of information and consultation, material and financial support, medical support, and psychosocial support.

Eighty-four percent of those surveyed reported, that they had been ordered to evacuate. Of the households ordered to evacuate, 58 percent complied and 20 percent left their homes, but admitted that they had remained in the flooded area for at least part of the time. Many sought shelter in higher regions or areas further from the broken dike. Twenty-three percent remained in their homes. Thus, 43 percent of the residents ordered to evacuate remained in the flooded area and were, in some cases, dependent on outside provisions (figure 11).

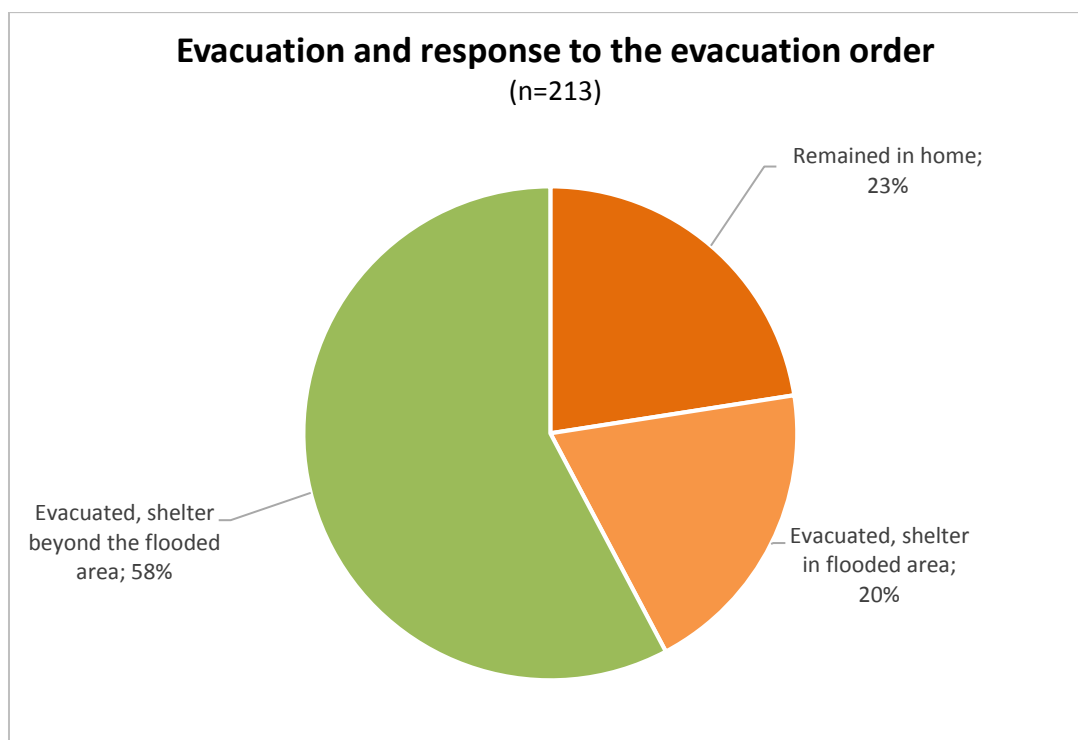


Figure 11: Evacuation and response to the evacuation order

The survey results show that the vast majority (77 percent) found shelter within their immediate social sphere, that is, they stayed with relatives, friends, acquaintances, or neighbors. Tourism infrastructure such as vacation homes, hotels, or campgrounds (19 percent) were also converted into temporary shelters for evacuees. A mere six percent of those surveyed were housed in emergency shelters (figure 12).

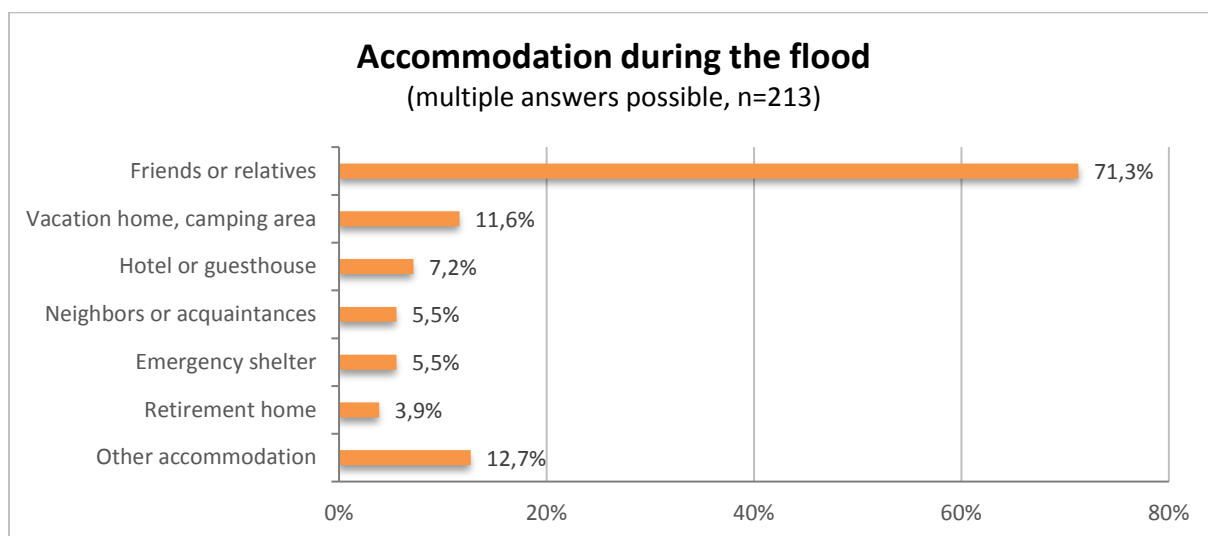


Figure 12: Accommodation during the flood

Many evacuees returned to their homes after just a few days. The majority (81 percent) had returned to their homes within a few weeks, although in some cases, homes remained only partially inhabitable. Others had to remain in their provisional housing for a longer period; 13 percent remained for several months and three percent for over a year. Two percent of those surveyed could not or did not wish to return to their previous homes (figure 13).

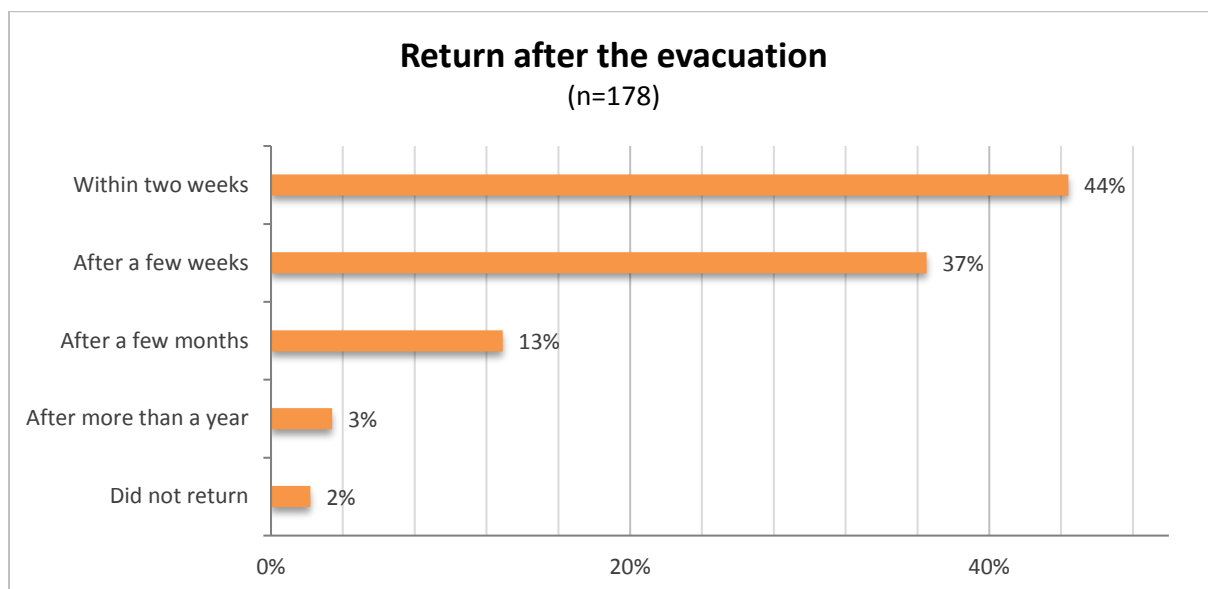


Figure 13: Return after the evacuation

The affected were dependent on various forms of support both during and after the flooding. Within the framework of the survey, participants were asked which form of help they had required at which time.³

The survey results show that **information** was the most frequently expressed need both during and after the flooding (figure 14). This related to the need for clarification of the situation during the event (69 percent) and the increased need for legal or administrative consultation following the flooding (from 17 percent during to 37 percent after).

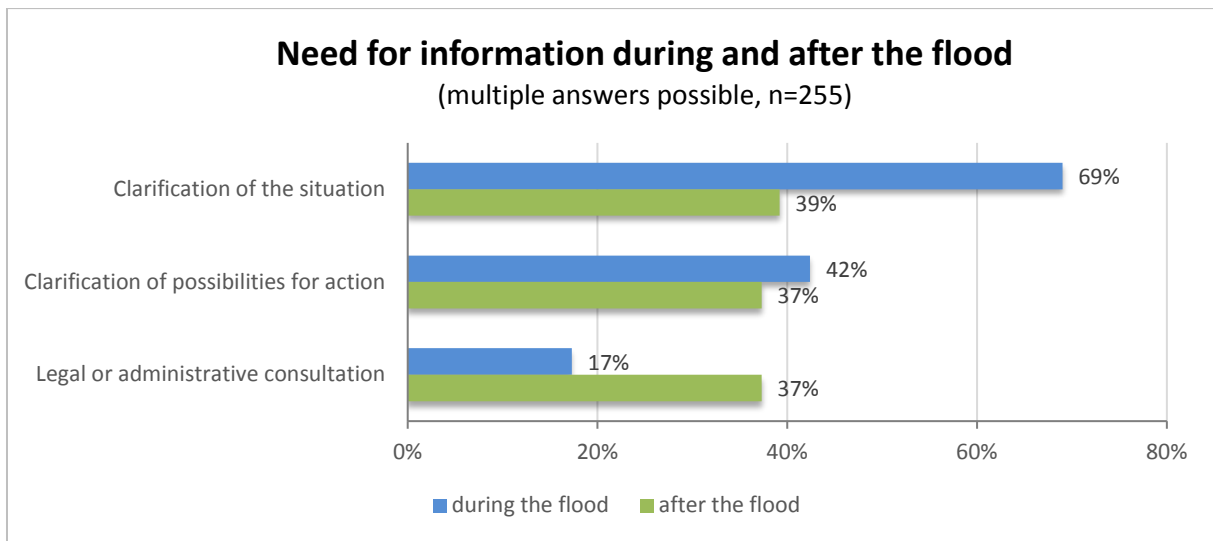


Figure 14: Need for information during and after the flood

The need for **material and financial support** (figure 15) was as follows: during the event, the majority of need was reported in the categories of provisions (34 percent), clothing and hygiene products (21 percent), and money in cash form (15 percent). After the event, the need for those items decreased significantly, while machinery for the cleanup process (16 percent) was increasingly requested.

³ The residents were asked to describe which of the listed forms of support they had relied on. On the basis of the available data, it is not possible to discern the extent to which participants reported a need for a specific form of support that had not been offered or if their statements only reflect the support they actually received.

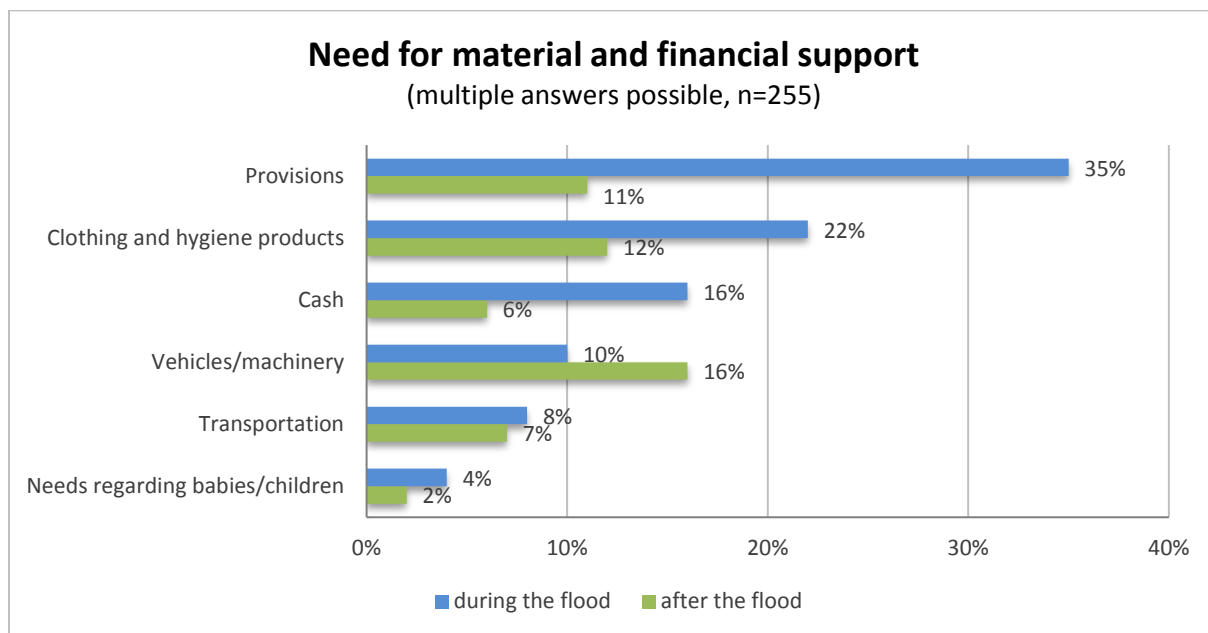


Figure 15: Need for material and financial support

Need for medical support (figure 16) was demonstrated through requests for medicine and aid, medical care and general nursing care. During the event, 22 percent of those surveyed depended on medicine and aid. Following the event, this number dropped to 14 percent. There was no noticeable variation in requests for medical and nursing care during and after the event.

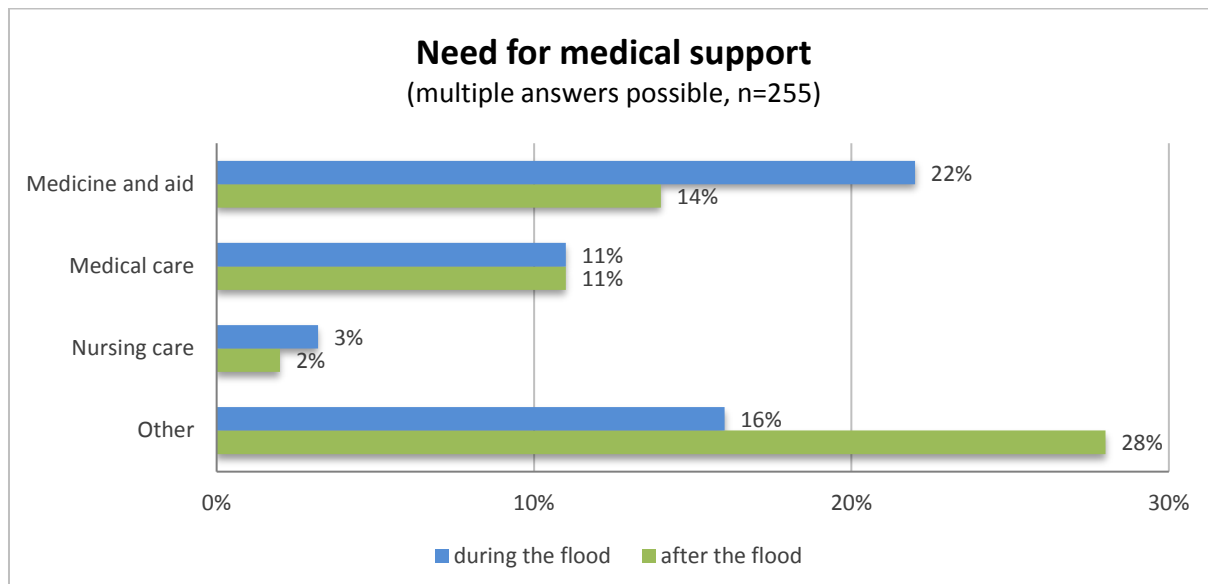


Figure 16: Need for medical support

The need for **psychosocial support** was less visible (figure 17). The question regarding psychosocial support dealt with the need for psychological and pastoral support during the coping process as well as concrete help such as religious services, childcare, or other activities. Eleven percent of the surveyed reported having had a need for psychological or pastoral support during the event. This number rose to 14 percent for the period following the event. Only two to four percent reported having needed childcare or other activities either during or after the event.

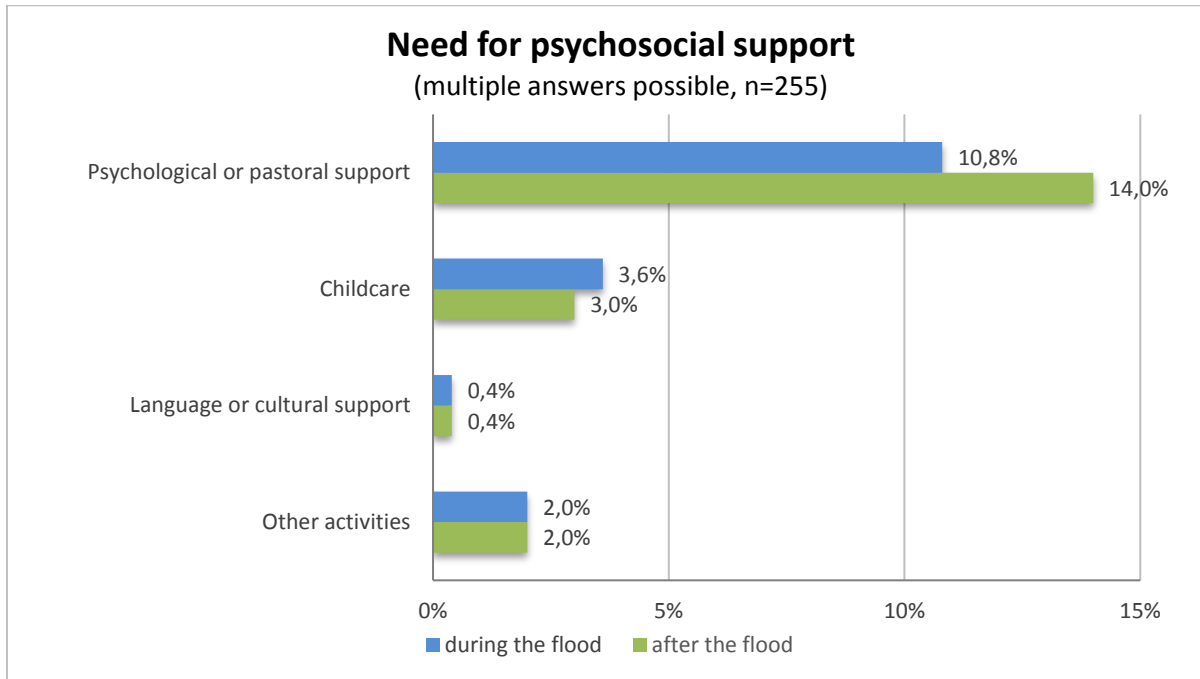


Figure 17: Need for psychosocial support

Three years following the event, 17 percent of those surveyed still depended on support (figure 18). This included financial, consultative, and psychological help (figure 19).

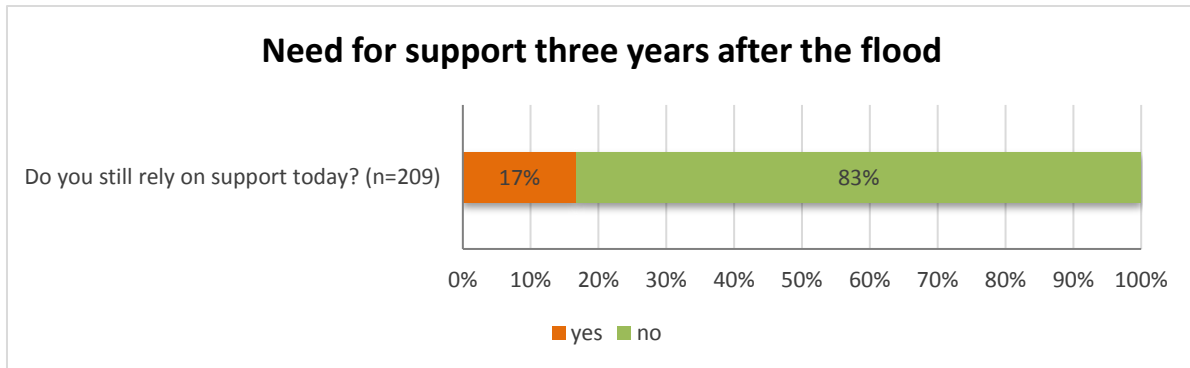


Figure 18: Need for support three years after the flood

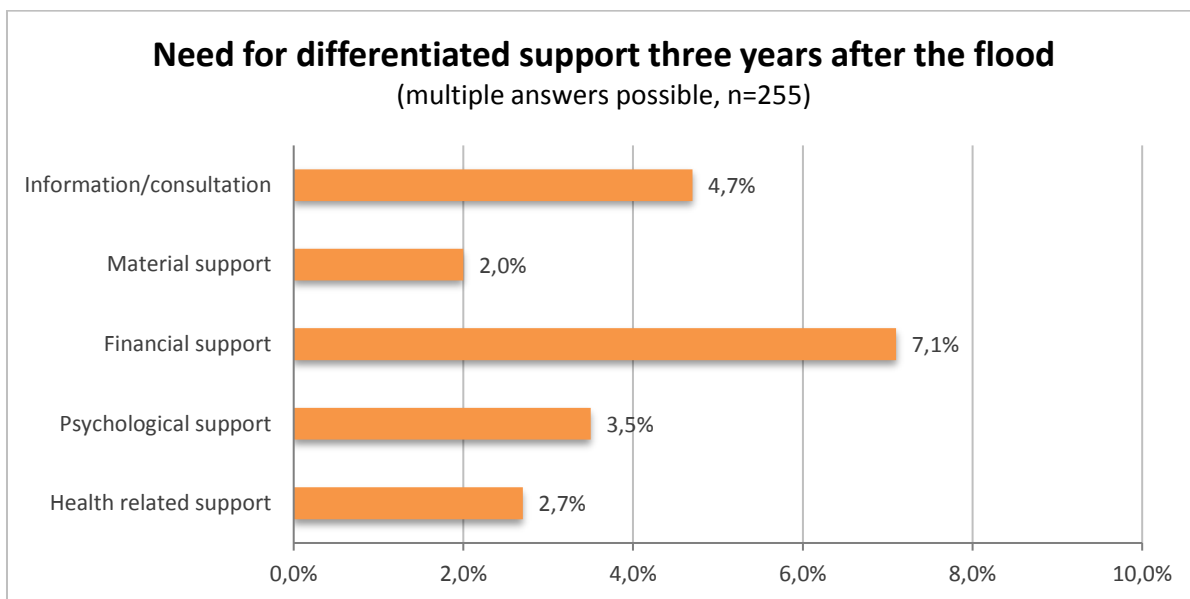


Figure 19: Need for differentiated support three years after the flood

6. Lack of Support

In order to identify the areas for which insufficient support was provided, the participants were asked whether specific forms of support had been lacking. Further, participants were asked to report the specific form of support they had needed but did not receive for the both the period during the event as well as after. Figure 20 provides an overview of lacking forms of support.

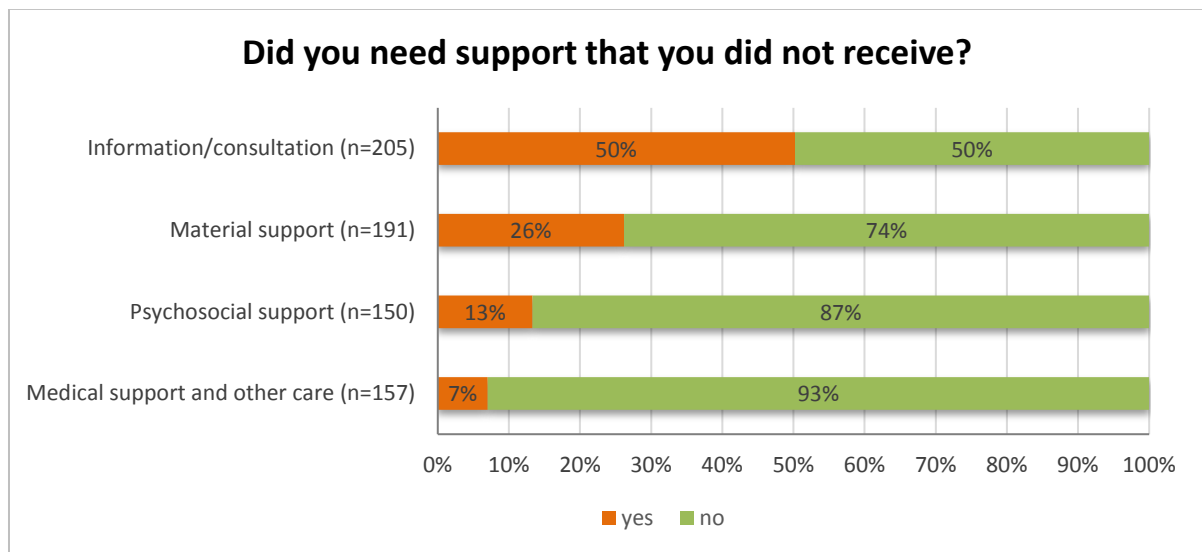


Figure 20: Lacking forms of support

Many participants reported that communication between the responsible agencies and the population had been particularly insufficient both during and after the event. In this regard, 50 percent of those surveyed indicated that they had not received sufficient **information**, which, according to the participants, led to uncertainty and helplessness (figure 20). Information regarding the situation, evacuation, and aid options was notably missing (table 1). The participants indicated that there was a need for an objective assessment of the situation, but more importantly, they expressed a need for an assessment of potential danger both immediately before as well as during the event and an assessment of secondary dangers such as contamination. Further, the participants were missing concrete information regarding evacuation procedures, particularly for pets and livestock. Participants frequently indicated that they had avoided emergency shelters and, at times, ignored the evacuation order, because there was no plan in place for the maintenance of their animals. A wish for a centralized contact point for information and assistance was expressed multiple times. According to the participants, information transfers often only occurred through word of mouth and between neighbors and acquaintances. This had the effect of limiting the spread of information, so that those who were not able to return to their homes for long periods of time as well as those who held full-time jobs outside of the community received information or offers of assistance late or not at all, restricting their ability to take advantage of aid.

Table 1: Missing information during and after the flood

	Information regarding the situation	Evacuation	Support and help
During the flood	<ul style="list-style-type: none"> ▪ Risk assessment ▪ Water level, direction of current, speed, etc. ▪ Effects in various villages (residence, neighboring villages) ▪ Secure/insecure spaces ▪ State of the dike ▪ Technical concerns (turning power on or off) 	<ul style="list-style-type: none"> ▪ Timing ▪ Actors ▪ Evacuation destination ▪ Duration ▪ Shelter of animals 	<ul style="list-style-type: none"> ▪ Who can I ask for help? ▪ Which forms of help are available and where? ▪ Where is help needed? ▪ Which measures are being taken or planned?
After the flood	<ul style="list-style-type: none"> ▪ Availability of infrastructure (water, electricity, etc.) ▪ Quality of drinking water ▪ Ground quality/contamination ▪ Ground-water table 	<ul style="list-style-type: none"> ▪ Location approval 	<ul style="list-style-type: none"> ▪ Which forms of help are available and where? ▪ Information on damage removal, damage regulation, and insurance

Twenty-six percent of those surveyed reported that they had not received sufficient **material and financial support** (figure 20). This pertained to machinery, equipment, and vehicles for supplies and mobility during the event as well as for cleanup and damage clearance. However, many forms of aid such as provisions, money in the form of cash, clothing – items that were widely distributed by many aid organizations – did not reach all of the affected. At times, the amount of material support provided to the affected, such as cleaning supplies, was insufficient, posing a challenge for the cleaning of water-damaged homes or even the maintenance of adequate personal hygiene (table 2).

Table 2: Lacking material and financial support during and after the flood

	Machinery and equipment	Finances	Material supplies	Companies/institutions /contractors
During the flood	<ul style="list-style-type: none"> ▪ Fuel (gasoline, diesel) ▪ Backup power supply ▪ Pumps ▪ Vehicles and transportation (front loader, van, ambulance service) ▪ Toilets, sanitary facilities 	<ul style="list-style-type: none"> ▪ Cash ▪ Ability to transfer funds 	<ul style="list-style-type: none"> ▪ Supplies for animals ▪ Provisions ▪ Household items ▪ Cleaning supplies 	<ul style="list-style-type: none"> ▪ Requested materials for local fire department
After the flood	<ul style="list-style-type: none"> ▪ Drying methods (heater, dehumidifier, fan/dryer) ▪ Machinery for the disposal of floating items/dead animals ▪ Vehicles and transportation 	<ul style="list-style-type: none"> ▪ Compensation for cost and expenses⁴ 	<ul style="list-style-type: none"> ▪ Provisions for return ▪ Clothing ▪ Blankets, sheets, mattresses ▪ Toys ▪ Cleaning supplies 	<ul style="list-style-type: none"> ▪ Workers ▪ Capacities of construction companies ▪ Garbage removal

Seven percent of those surveyed indicated that they had not received necessary **medical support** (figure 20). According to the affected, a lack of access to general practitioners as well as specialists presented the largest challenge.

When asked which support was missing, 13 percent of those surveyed indicated that they had not received needed **psychosocial support** (figure 20). Psychological and pastoral support was missed the most. The affected had hoped for more opportunities to process their experiences in discussion groups and through exchanges. Further, the support provided for children and families was perceived to be inadequate. In this regard, residents identified a lack of childcare and other activities for children as well as a lack of contact persons for children.

⁴ It was often stated that emergency relief had to be paid back or that necessary expenditures were not acknowledged.

7. Sources of Support

A number of actors responded, both spontaneously and through organizations, to the various needs of residents. This includes civilians from the immediate area as well as from surrounding regions, employees from government agencies, and professional disaster protection workers. In order to illustrate this incredibly heterogeneous group of actors during the course of the disaster, residents were asked to identify the source of the most support. In doing so, a distinction was made between the categories of information, financial and material support, and medical and psychological support during and after the event.

The majority of participants indicated that they had received the most support from family and friends in **all of the surveyed categories**. This primarily pertains to the time during the event. Following the event, this support decreased; however, it remained the most frequently reported in all of the categories. Disaster protection organizations, volunteers, and neighbors were also identified as important sources of support for the period during the event. Although the impact of the Federal Agency for Technical Relief (THW), the fire department, neighbors, and volunteers decreased in the period following the event, the significance of support provided by aid organizations like the DRK or Caritas increased. Further actors such as the municipal administration, private businesses, and clerical institutions provided important help, particularly following the event (figures 21-24).

The most important sources of information in addition to friends, family, and neighbors were various media outlets and explicitly social media networks. The municipal administration, THW, and the fire department also played important roles. Following the event, the significance of aid organizations as an information source increased. This can be largely attributed to the consultation services regarding damage regulation and processing offered by those organizations (figure 21).

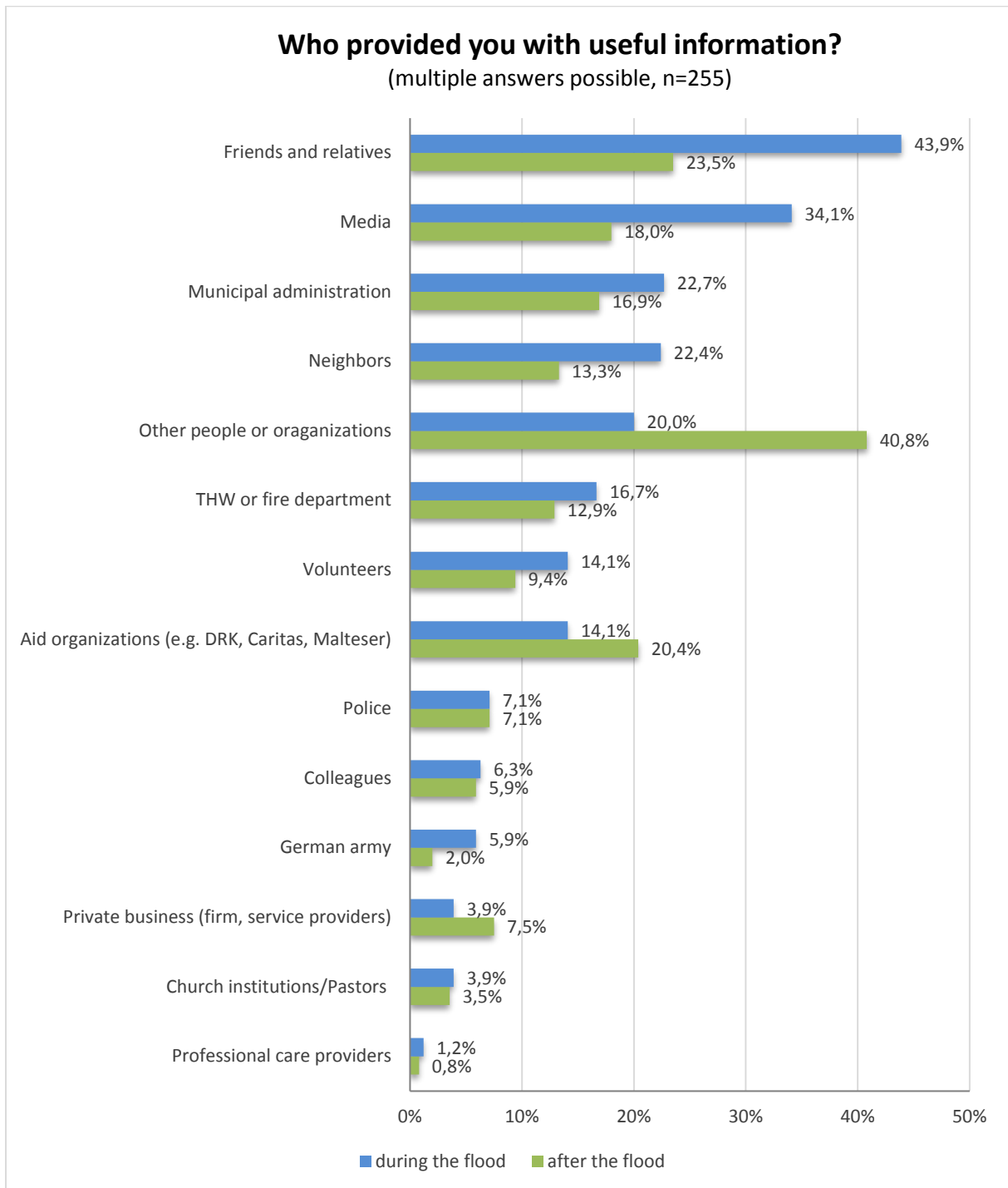


Figure 21: Primary sources of useful information

During the event, the affected received **material and financial support** primarily from friends and relatives, followed by aid organizations, THW, fire departments, and volunteers. Following the event, the impact of support provided by aid organizations, the municipal administration, private businesses, and clerical institutions increased. Banks and insurance joined as new actors, providing concrete material support (e.g. dehumidifiers) in addition to their official services (figure 22).

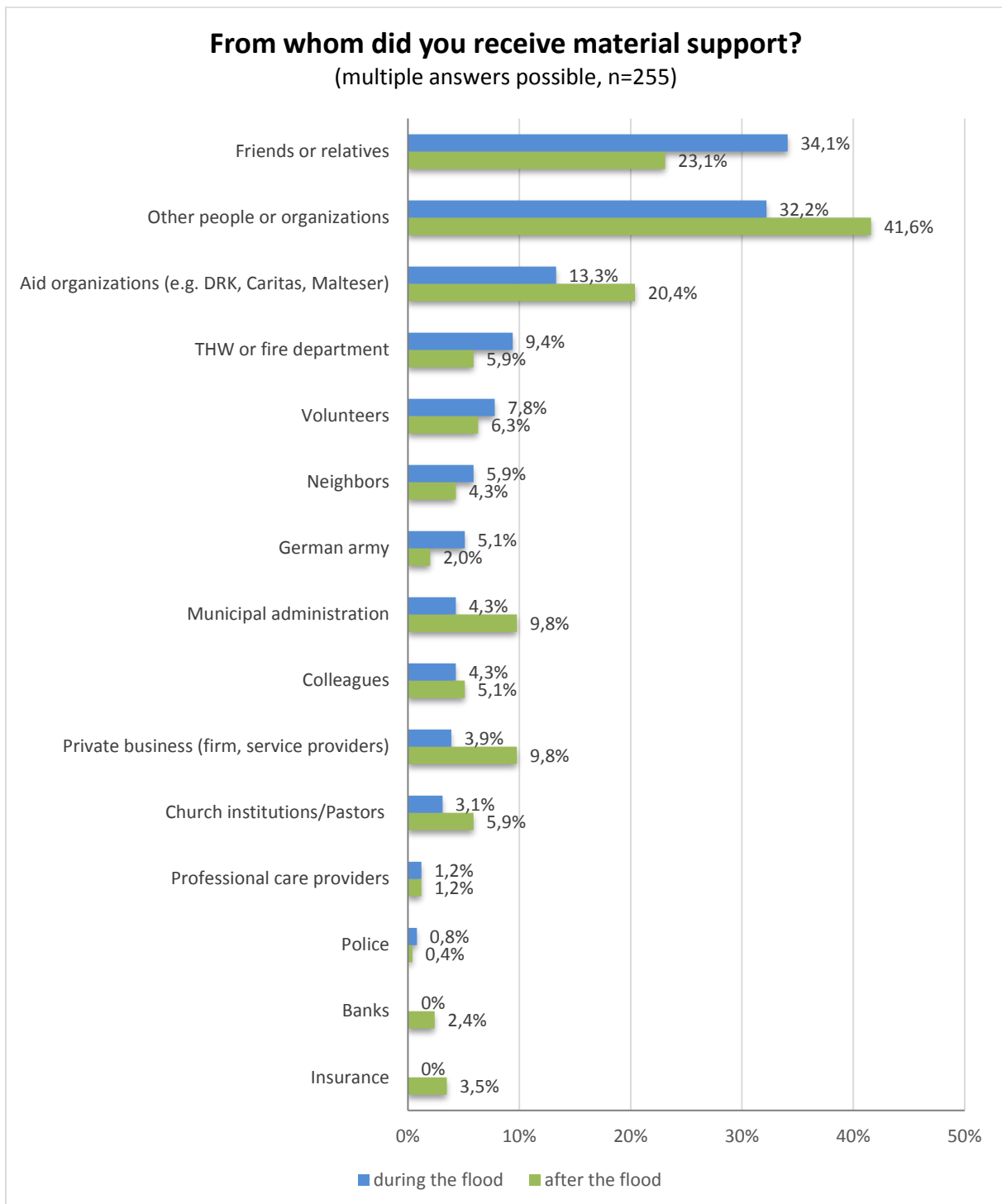


Figure 22: Primary sources of material support

Friends, relatives, and general practitioners provided **medical support** both during and after the event. Private firms, service providers, aid organizations such as the DRK and Caritas, and care providers were also of importance. Again, the impact of aid organizations increased after the event (figure 23).

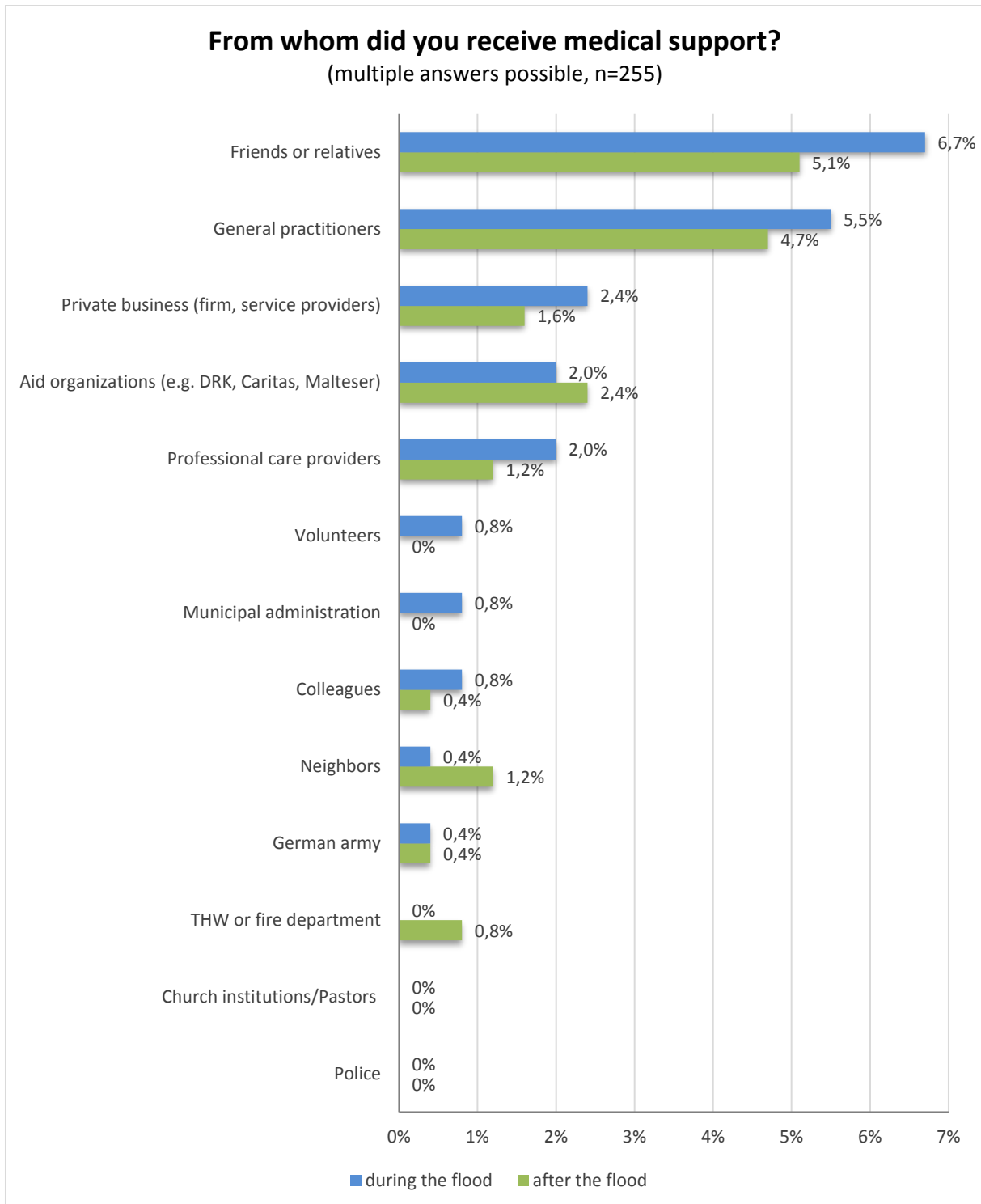


Figure 23: Primary sources of medical support

Throughout the entire disaster progression, friends and acquaintances provided by far the most **psychosocial support**. During the event, the participants were supported by neighbors, THW, and fire departments as well as aid organizations. Psychosocial support following the event was primarily offered by aid organizations; however, neighbors, clerical institutions, employees, and colleagues also played a role (figure 24).

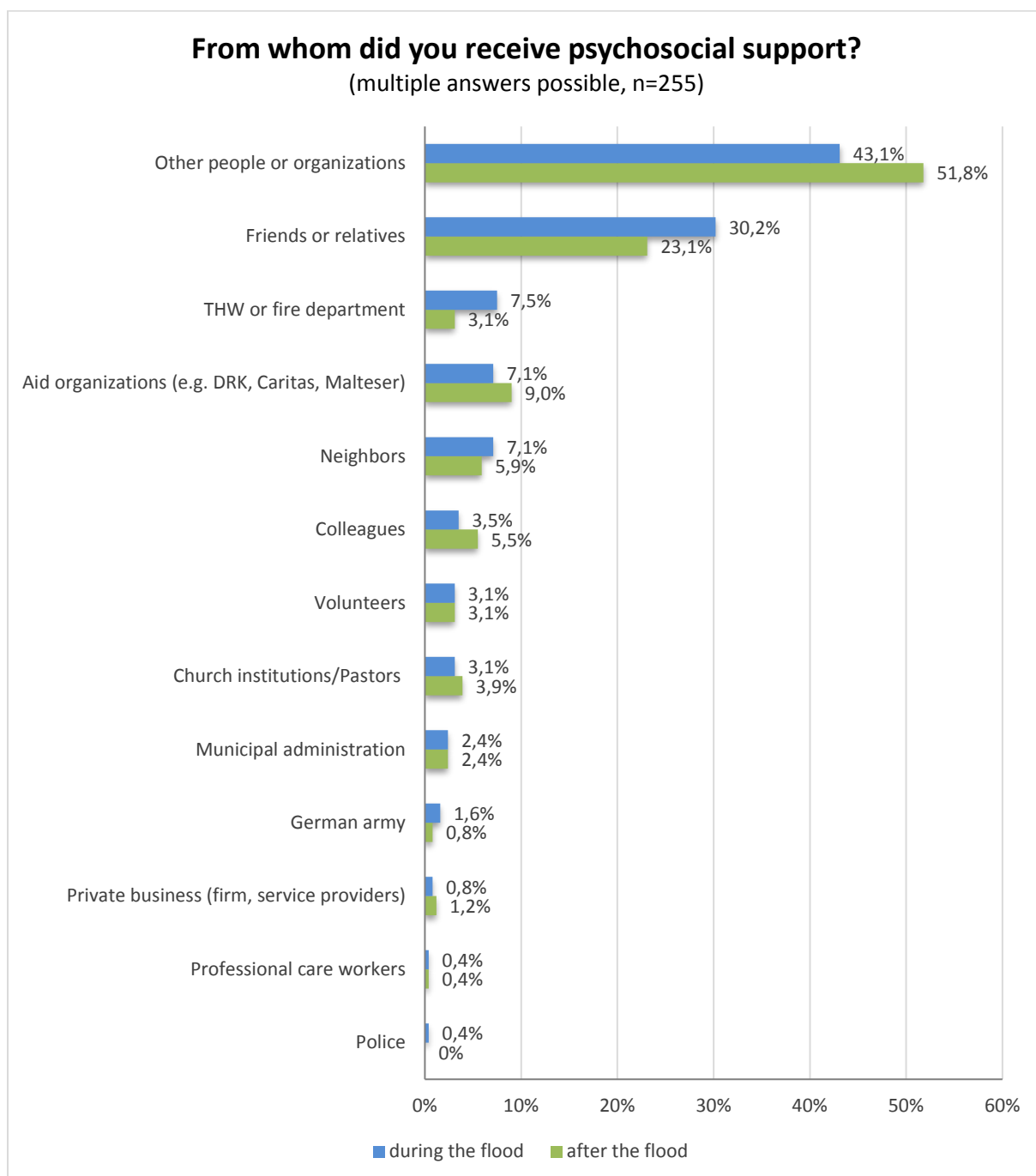


Figure 24: Primary sources of psychosocial support

8. Evaluation of Civil Protection Organizations and Agencies

Civil protection organizations and agencies provide help and support to the population during a disaster. The ways in which this support is perceived, however, varies depending on personal experience. For this reason, participants were asked about their experiences with civil protection organizations and agencies and in particular whether they felt they had received adequate support. How organizations and agencies operate in emergencies and disasters can have a long-term impact on how these situations are perceived by the affected. The survey thus includes questions that address the trust that institutions enjoy as well as whether the level of trust changed following the flood.

Participants perceived the support offered by agencies as significantly worse than the support provided by aid organizations (figure 25). Thus 70 percent of participants rated agency competencies negatively, while the support offered by agencies received a negative rating from 50 percent of participants. Aid organizations were rated negatively by 16-26 percent of participants.

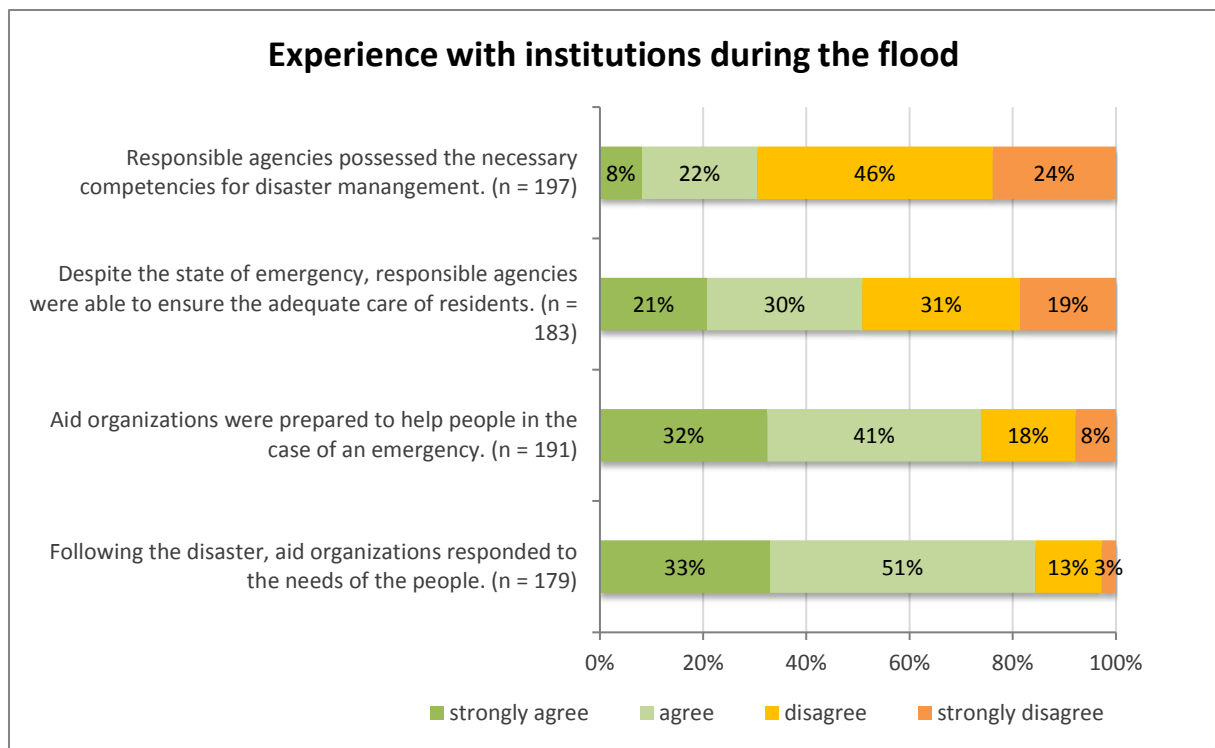


Figure 25: Experience with institutions during the 2013 flood

As the flood event progressed, trust in the fire department, the THW, and aid organizations greatly increased, as is shown in figure 26. Thirty-six percent of participants indicated that their trust in these organizations increased or significantly increased. Trust in municipal agencies and the national government decreased significantly; 36 percent of participants indicated a decrease or significant decrease in trust in the municipal administration and 56 percent indicated the same decrease in the national government (figure 26).

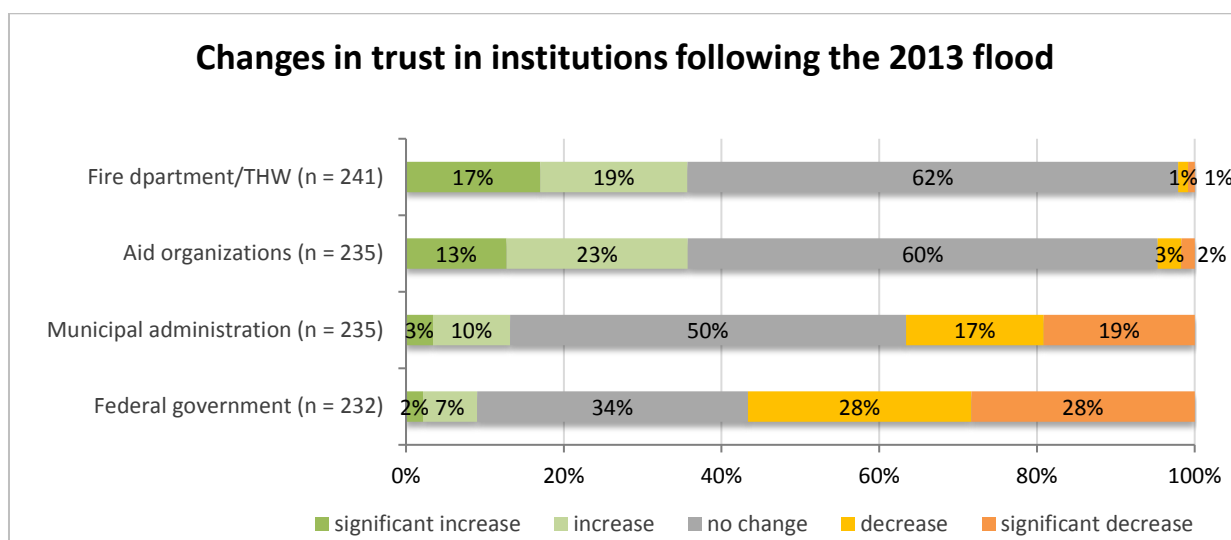


Figure 26: Changes in trust in institutions following the 2013 flood

When examining current trust in civil protection organizations and agencies, it becomes apparent that organizations enjoy significantly more trust than agencies (figure 27).

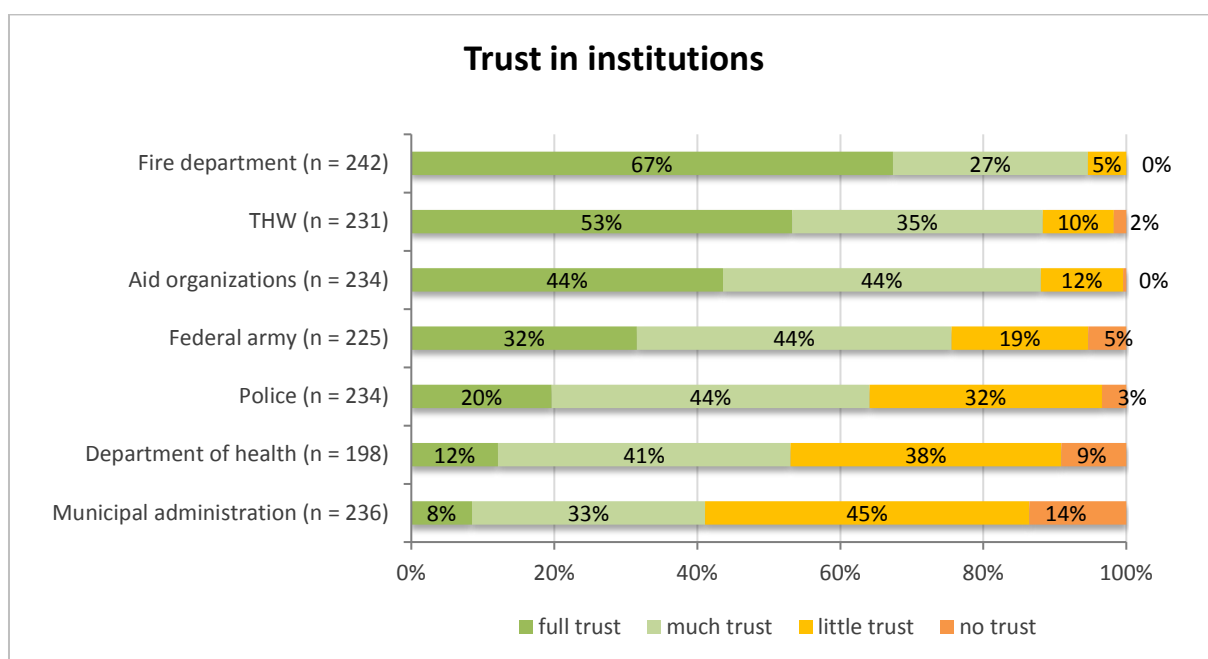


Figure 27: Trust in institutions

9. Evaluation of Support from the Population

An initial reflection on the actors who provided support (chapter 7) demonstrates that individuals stemming from participants' immediate social environment – friends, relatives, and neighbors – serve as an important source of material and immaterial help during disasters. In the context of this study, data was collected on the extent to which and for whom residents in the affected region offered help themselves as well as how these residents perceived the overall support in the neighborhood.

The population provided significant support to organizations and fellow civilians both during and after the event (figure 28). Seventy-seven percent of those surveyed indicated that they had offered help. This number rose to 78 percent following the event, independent of whether or to what extent individuals had been personally affected.

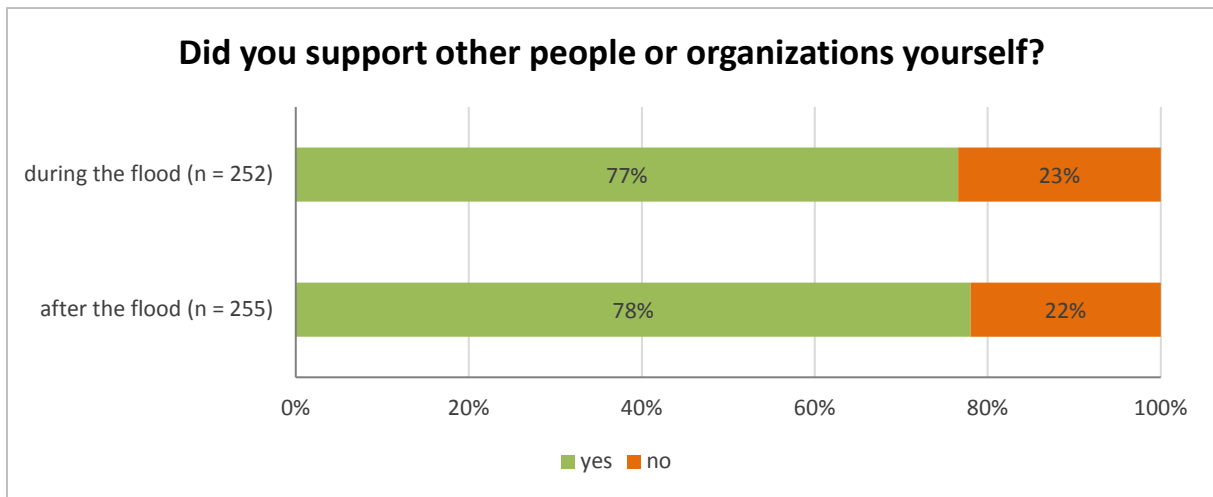


Figure 28: The population's support of other people organizations

The survey shows that individuals offered the most support within their immediate social environment – friends, relatives, or neighbors – and that this support subsided minimally following the event. The municipal administration, the THW, fire departments, and volunteers also received support during the event, although this support decreased significantly later on. Other actors generally received less support (figure 29). Many survey participants reported, that they had helped, however they could not or would not associate this help with any given organization or institution. This form of help was exemplified through activities during the evacuation, provisioning, and cleanup as well as activities such as sandbag preparation, material and monetary donations, and distribution of donations.

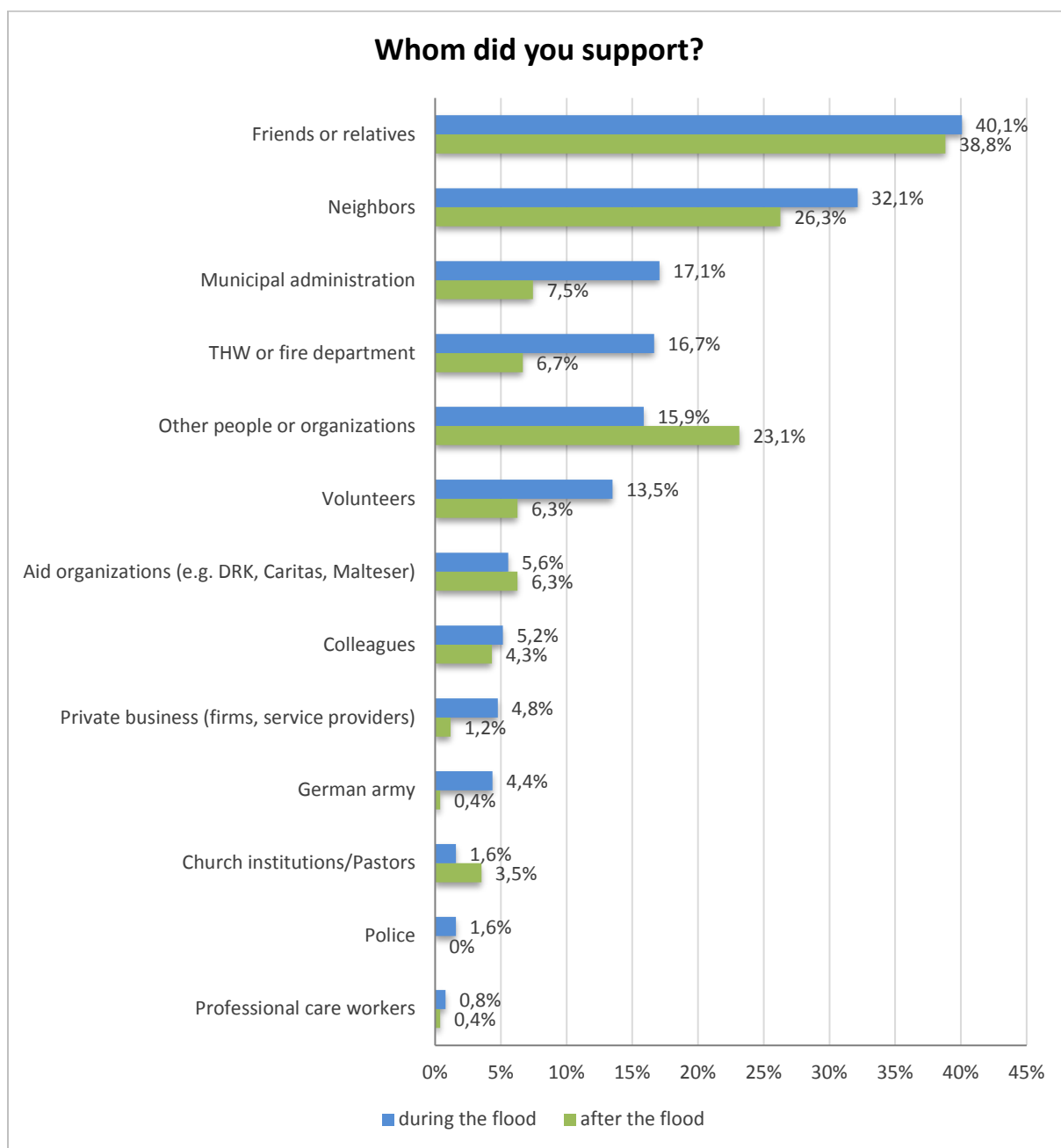


Figure 29: Support from the population

More than 80 percent of those surveyed assessed neighborly support positively. Nevertheless, six and seven percent of participants, respectively, indicated that they strongly disagree with the two survey statements (figure 30).

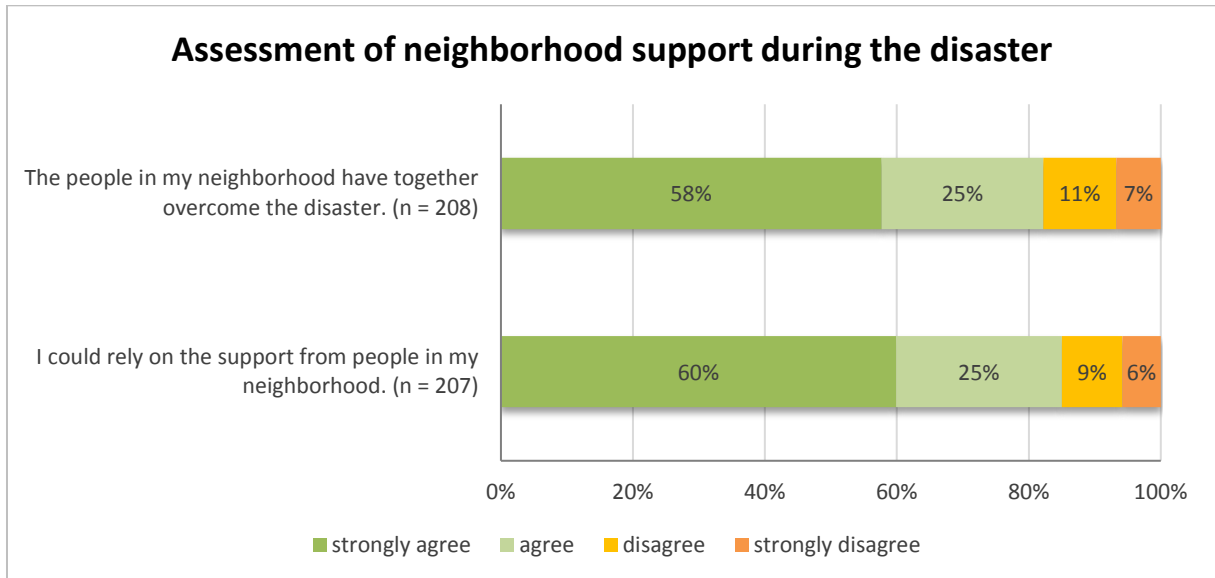


Figure 30: Assessment of neighborhood support during the disaster

Figure 31 illustrates how relationships between neighbors changed in the wake of the event. More than half of the participants indicated that their experiences during the disaster had had no substantial impact on the neighborhood. Solidarity and cohesion in neighborhoods increased for 28 percent of the participants and decreased for nine percent.

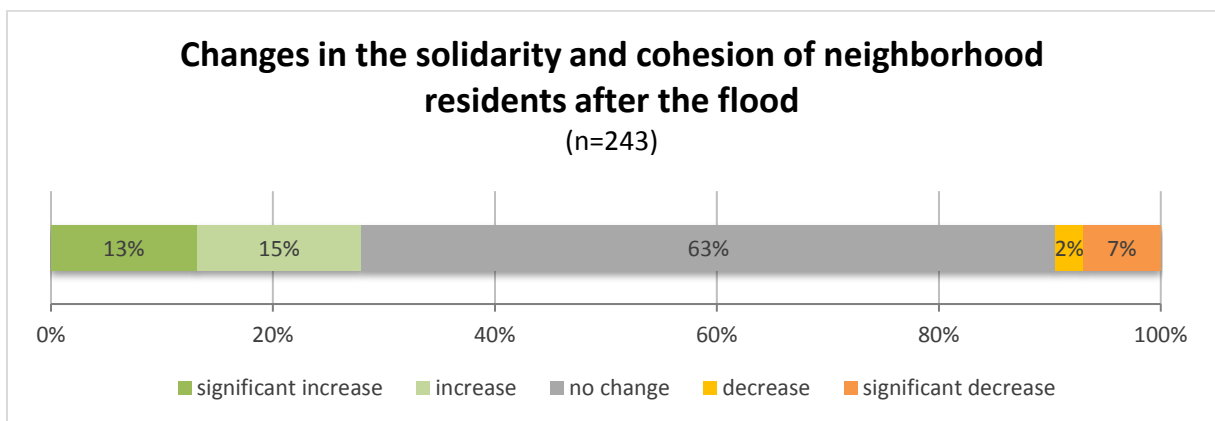


Figure 31: Changes in solidarity and cohesion of neighborhood residents after the flood

10. Voluntary Engagement during Disaster Response

This section examines the extent to which the knowledge and skills gained through volunteer engagement play a role in disaster response.

Forty-three percent of participants indicated that they had engaged in volunteer work in the municipality or the surrounding area through clubs or neighborhood groups before the 2013 flood. Figure 32 illustrates the value these participants assigned to their prior engagement in terms of the role it played during the flood response period; for 80 percent of participants, prior engagement was considered helpful (46 percent), or very helpful (34 percent) for coping with the disaster.

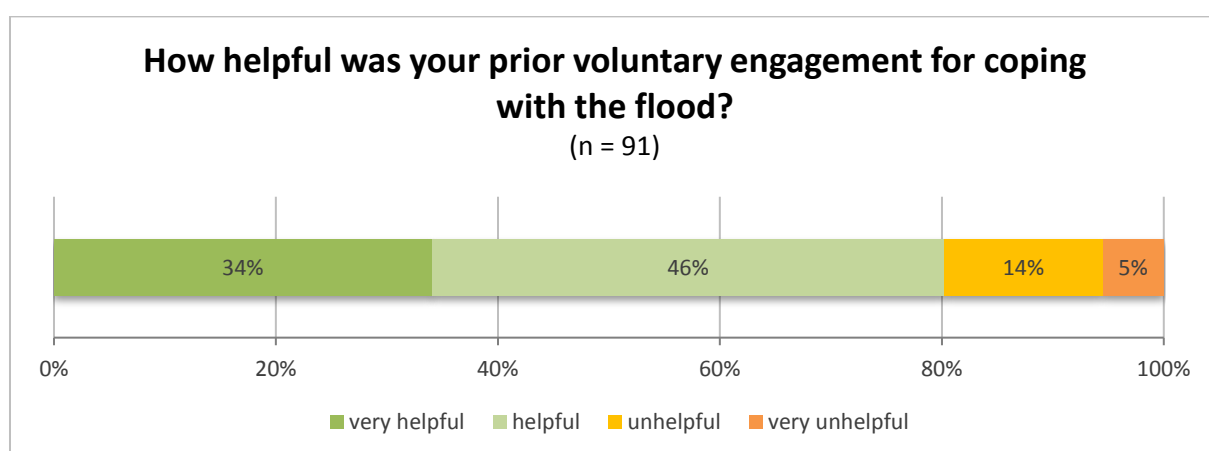


Figure 32: Estimation of the usefulness of prior volunteer engagement for disaster response

Further commentary provided by the participants who rated their engagement as helpful or very helpful, provide clues regarding the importance of engagement that can be organized into three categories (table 3).

Table 3: Estimation of the usefulness of prior voluntary engagement for disaster response

Background knowledge	Soft Skills	Social networks
<ul style="list-style-type: none"> ▪ Geographical situation ▪ Flood protection ▪ Social networks 	<ul style="list-style-type: none"> ▪ Organization abilities ▪ Communication skills ▪ Psychosocial competencies 	<ul style="list-style-type: none"> ▪ Financial support ▪ Psychosocial support ▪ Sources of information ▪ Reputation and influence

Figure 33 shows that a large number of those surveyed engaged in volunteer activities in their neighborhoods in one or more ways. The survey included questions regarding active membership in a local organization or club (47 percent), neighborhood activities within the last 12 months such as engagement to effect change in the community (38 percent), and daily support offered to fellow community members (53 percent).

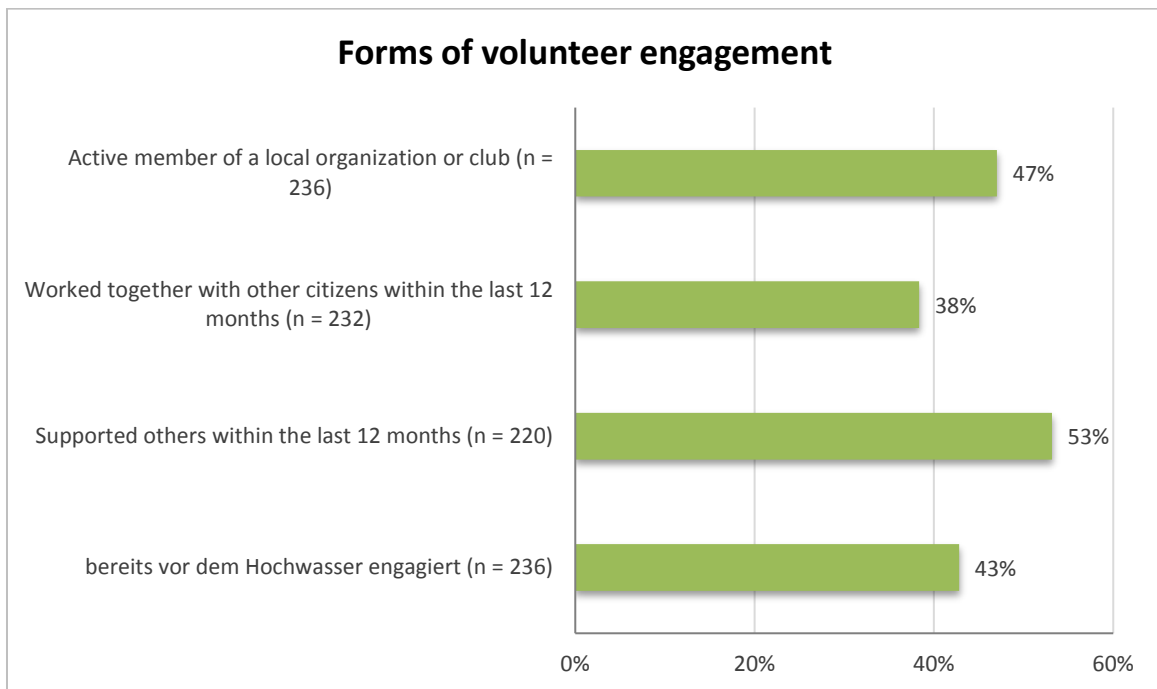


Figure 33: Forms of volunteer engagement in the community

Volunteer engagement does not only influence disaster response, disasters can also influence engagement structures. Thus, 16 percent of participants indicated that participation in community life like engagement in cultural or sports clubs (*Vereinsleben*) had increased or significantly increased following the flood, whereas nine percent indicated a change for the worse (figure 34).

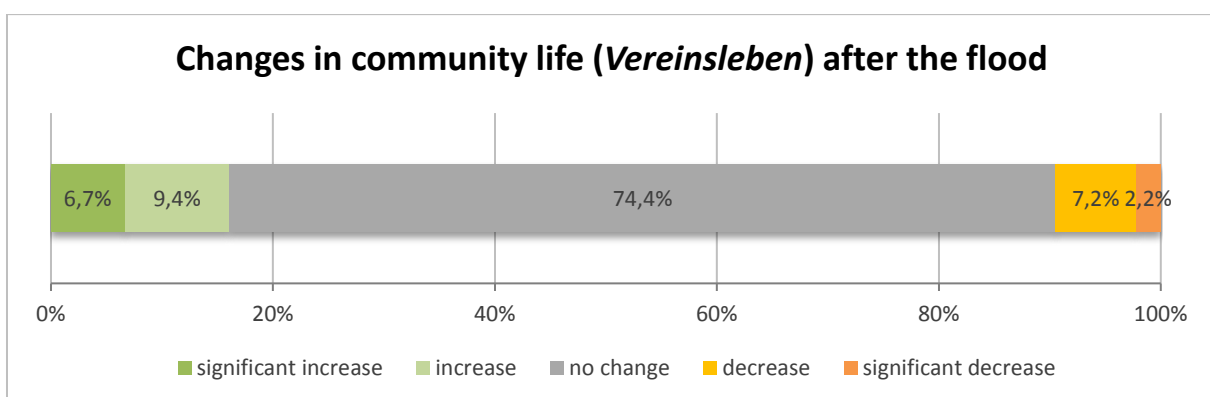


Figure 34: Changes in community life (*Vereinsleben*) after the flood

11. Precautionary Behavior

Within the framework of the survey, the affected were asked, which precautionary measures they had taken before the flood, how helpful these measures were, and how they perceive the current state of precautionary measures.

Slightly more than half (52 percent) of those surveyed indicated that they had taken preventative measures prior to the 2013 flooding and 48 percent indicated that they had not taken any preventative measures. Short-term measures taken directly prior to the event predominated, however long-term precautions such as structural measures or insurance were also identified. Table 4 illustrates the various measures indicated by the participants.

Table 4: Preparation prior to the flood

Structural measures and protection of private property	Preparation, supplies, evacuation	Insurance
Waterproofing basements, damp-proof course	Supply of cash, provisions, and animal feed	Storm and tempest insurance
Filling of sandbags and trench lining	Supply of water for animals	Other insurance
Protection for doors and windows	Emergency suitcase for evacuation (clothing, photos, documents, etc.).	
Clearing furniture and electronics/machinery and relocating in higher rooms	Protection or evacuation of animals	
Secure storage of hazardous materials (oil heating)	Preparation of inflatable boat	
Disconnection of electricity, gas, and water	Arrangement for dike observation	

Sixty-five percent of survey respondents assessed their own preventive measures as helpful or very helpful, while 19 percent identified their actions as not helpful (figure 35).

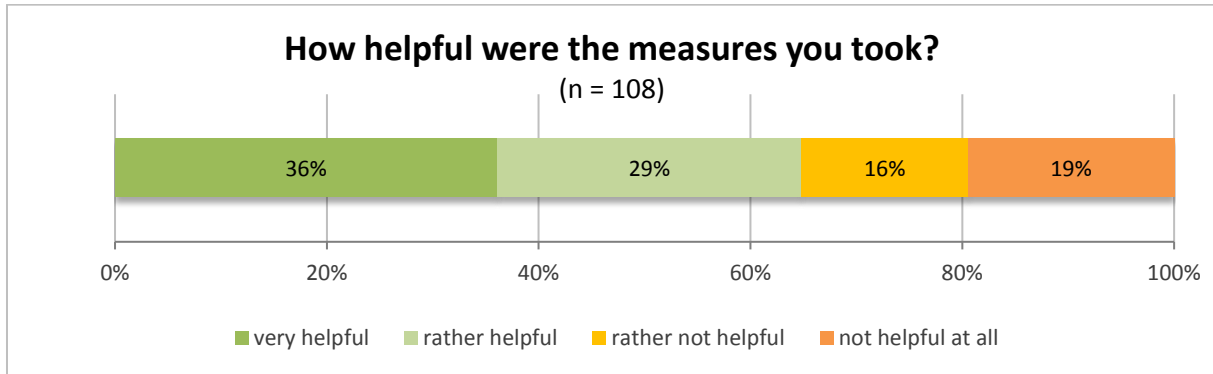


Figure 35: Assessment of one’s own protective measures

Changes in risk perception as well as regarding precautionary measures are illustrated in figure 36. The majority of participants indicated that their own awareness of risk increased significantly following the event (62 percent). In assessing their own as well as governmental precautionary measures, 25 percent of participants indicated that they had improved their own precautionary behavior since the event, 72 percent did not indicate any change, and four percent indicated a negative change. Governmental measures, in contrast, were valued higher than prior to the flood (62 percent).

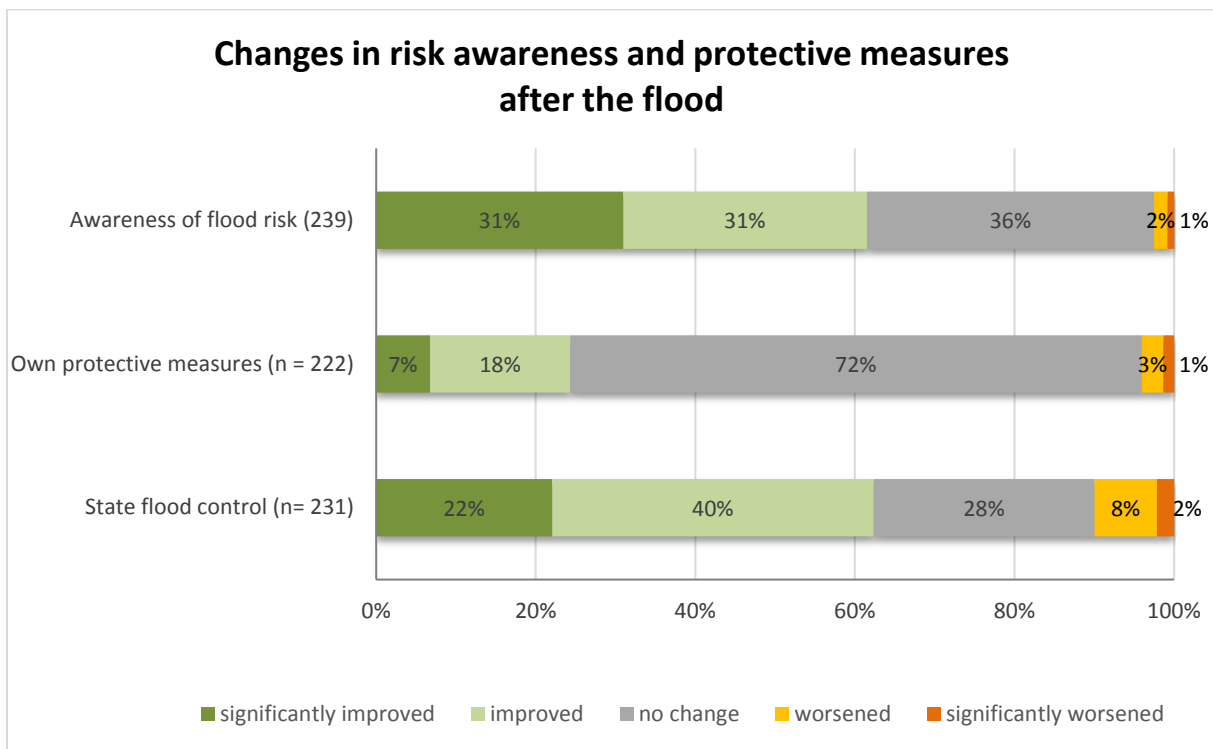


Figure 36: Changes in risk awareness and protective measures

A high level of risk awareness was also mirrored in participants' information behavior. At the time of the survey, 91 percent of participants indicated that they follow current weather warnings through the media (figure 37).

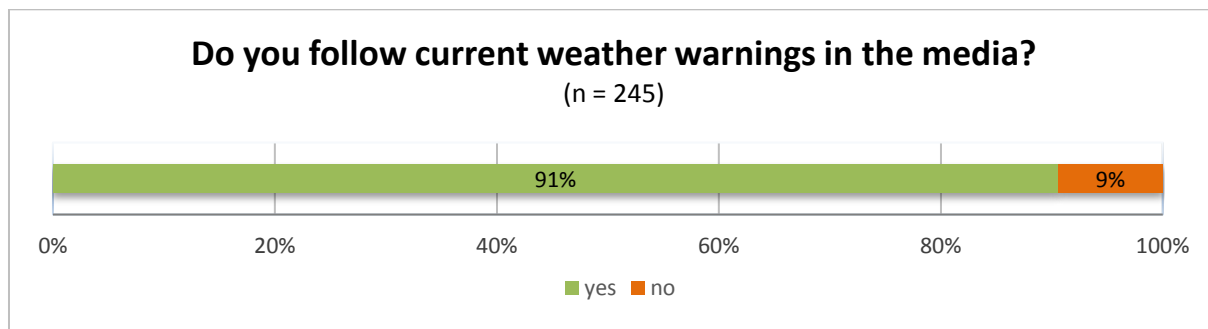


Figure 37: Awareness of weather warnings

The risk of a flood is just one of the potential risks residents must grapple with. In order to determine the perceived level of flood risk and therefore the evaluation context for precautionary measures, residents' perceptions of risk and daily concerns were analyzed (figure 38). Around half of those surveyed expressed that they were concerned or very concerned that another flood could take place, however daily concerns were generally of greater significance.

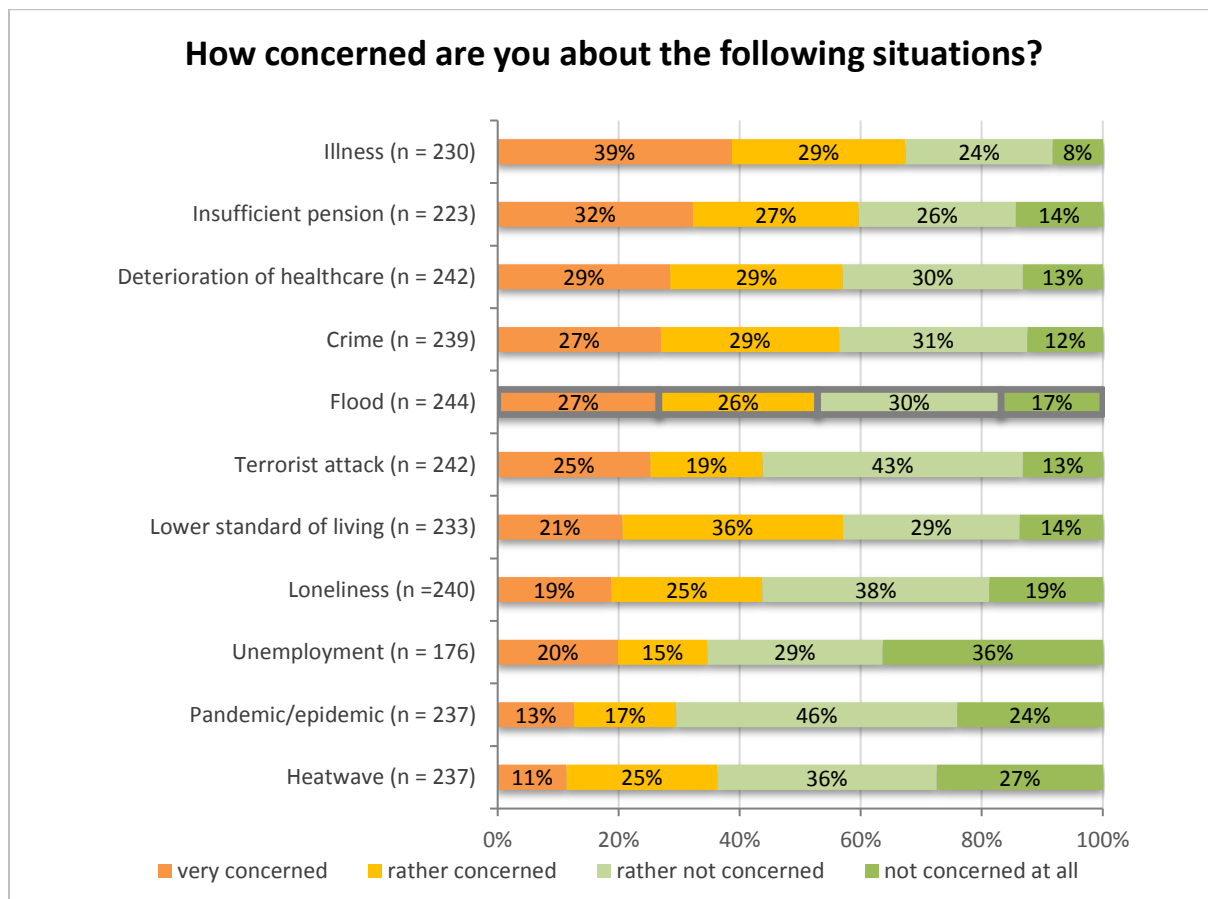


Figure 38: Perceptions of dangers and daily risk

12. Summary and Outlook

This survey not only examines the 2013 flooding retrospectively, it also depicts the floods' long-term effects, providing a snapshot of the situation three years after the event. The following offers a summary of a few important results.

In addition to the visible, material damages, widespread **immaterial and, in particular, psychological burdens** emerged, which the affected at times described as being even more severe than the material effects. Even three years after the event, around one third of affected individuals indicated that they still struggled to discuss the occurrences.

The results also show that **existing offerings and measures** do not adequately reflect residents' real needs. In this regard, a great number of affected individuals did not follow the evacuation order for a variety of reasons. Further, a large percentage of those who did leave their homes did not stay in emergency shelters, choosing instead to seek shelter with friends or relatives both within and outside of the flooded area. The survey results also demonstrate that other existing offerings such as provisions, cash, or clothing did not always reach the population in need both prior to and following the event.

Furthermore, concrete **gaps in institutional and/or organizational support** were identified. These include psychological and medical support and indicate a need for an expansion of existing support services.

The results clearly allude to the **temporal dimension of disasters**. Disasters are long-term processes that in no way end once the floodwaters recede, the houses dry, and the dike is repaired. The disasters' effects are still clearly visible even three years following the event, demonstrating a need for long-term financial, consultative, and psychological support. For many affected individuals the coping process will last years if not decades and may never come to a close.

The analysis shows the **dynamics of temporally variant needs** of the affected and therefore the necessity of adapting aid services for various phases of disaster response and coping to ensure the availability of adequate support.

The survey documents the **significance of existing social networks** during the event as well as following its retreat. The most important forms of support primarily arose from the affected individuals' immediate social environment. Further, the survey illustrates the extensive willingness to help amongst residents, independent of their own level of affectedness.

The **complexity of the disaster** and its impact on incredibly variant aspects of the lives of affected individuals also became apparent through the survey results. This includes long-term changes to one's health, social relationships, and one's perception and assessment of risks as well as precautionary measures.

Within the context of the flood, significant shifts in residents' trust in agencies and organizations could be identified. While trust in municipal administrations and agencies, and, in particular, the national government overwhelmingly worsened, trust in the fire department, the Federal Agency for Technical Relief (THW), and aid organizations increased.

The findings in this report address only a few of the descriptive survey results. The research as well as the practical work that the KFS strives for through the INVOLVE project will continue to develop beyond these results – as important as they may be as an intermediate step. Further analysis will encompass statistical correlations (bivariate and multivariate) while also examining the results as they relate to data stemming from other sources (expert interviews, workshops, etc.). Additional publications are already in the planning stage. Moreover, the results will be made available to various disaster protection organizations and agencies, specifically our project partner, the German Red Cross, as well as other actors in the field in order to contribute to the improvement of disaster protection.

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This report was written with the help of Anke Desch, Laura Fischer und Anjuli Weigelt.

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