Citizens' involvement in emergency preparedness and response: a comparative analysis of media strategies and online presence in Turkey, Italy and Germany

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Abstract

This article reviews the role that citizens may play as first responders by comparing how various communication media are utilised by response organisations and government agencies to train and network with citizens. In addition, it aims to investigate the nature of the communication strategies and approaches that are utilised by organisations reaching out to volunteers. In order to accomplish this goal, we engaged in an analysis of citizen awareness programmes and volunteer training processes in three different countries: Turkey, Italy and Germany. Across the analysed countries, we observed inconsistencies in the extent and types of utilisation of social media, including the fact that the dominant approach is still communicating *to* citizens rather than communicating *with* citizens. Finally, the comparative analysis points out the inconsistent accessibility or availability of training materials online, and particularly in social media platforms. This may reduce the likelihood that a large portion of the population, mostly of younger age, will have the opportunity to stay informed on important emergency preparedness topics.

Keywords

Crisis management

Emergency preparedness

Emergency response

Response organisations

Social Media

Citizen training

Introduction

The increase in the number of citizens that have adopted new media technologies and social media applications over the last decade has prompted a related increase of studies that look into the nature of communication flows during crises and emergencies, in particular to the role that citizens can play in crisis management and emergency communications. For example, some of the leading scholars in this field have remarked how the use of social media applications by the public can potentially enhance information gathering and problem solving capacities of response organisations and government agencies (Starbird and Palen 2010). It has also been pointed out how the faster flow of information in social media, and the subsequent intelligence derived from them, can play a key role in the development of first response stations, directing volunteers to places of need, and coordinating first response actions of response organisations and volunteers (Corbin 2012). Social media can be used by

citizens to produce, share and get access to information, meaning that they are no longer just consumers, but become producers, distributors and verifiers of information in the context of emergencies.

This article will discuss how media technologies, including conventional forms of mass media and new technologies and applications, are used to involve citizens as first responders during emergencies. The authors will first review current research related to the use of communication technologies during emergencies, the impact of such technologies on first response behaviour of citizens, and how media technologies can be used to train and organise citizens. Following this, we will engage in a comparative analysis of how volunteer organisations and government agencies communicate to the public to increase awareness of emergencies and train volunteers in Turkey, Italy and Germany, by looking into their online presence and their media strategies, then conclude by proceeding to highlight what we believe to be the most salient emerging issues from the analysis.

Citizens as first responders

Citizens can be involved in emergencies during both the preparation and response phases. If the preparation is well organised this can ensure that a first response can be provided in a timely manner and that resources can be organised efficiently. Therefore, the preparedness of citizens for emergencies will not only improve their ability to provide response before the official response organisations arrive, but help them to collaborate with each other and the authorities themselves (Baruh et al. 2014). In this section, a review of recent emergencies and crises will help to provide an overview of, first, how citizens may utilise information and

communication technologies in first response after crises, and, second, the potential impact of use of such technologies on citizens' involvement in emergency response.

Use of communication technologies and media

It is notable how, in the last few years, crowdsourcing tools and social media have become new sources of large sets of data and created unprecedented opportunities to enhance disaster response. The Haiti earthquake in 2010, for example, marked the 'tipping point in the use of social media by the affected population to convey needs to a worldwide audience' (United Nations Foundation 2012: 32) and also the emergence of what has been as named as 'digital volunteerism'. In Haiti, one of the tools that integrated social media and digital volunteer efforts was the crisis mapping platform *Ushahidi*, through which digital volunteers translated the messages that originated from the disaster-affected crowds and pinned them on a map in almost real-time. The map was able to provide a stronger situational awareness that was helpful to the responding organisations in their efforts to allocate their resources. *Ushahidi* and other crowdsourcing projects utilised after Haiti earthquake such as *OpenStreetMap*, have demonstrated the potential of new media in facilitating new forms of volunteerism and how new communication channels potentially connect affected communities with responders (Starbird and Palen 2010). In another occasion, an open source micro-tasking platform named *MicroMappers* was utilised first after the Typhoon Pablo hit the Philippines in December 2012 to filter out the data from social media with the help of digital volunteers and narrow down the data to efficiently deal with and create a combination of 'micro-tasking' and 'disaster-mapping'. The volunteers identified and tagged the pictures and videos in Twitter to determine the damage caused by Typhoon Pablo. In many respects, *MicroMappers* is another

example illustrating that with the help of new crowdsourcing technologies, citizens can engage in emergency response not only by providing information that can then be processed by authorities but also by helping process the information provided by other citizens (Gilber-Knight 2013). Likewise, during Hurricane Sandy, which hit the U.S. east coast in late October 2012, volunteers gathered for analysing aerial photos in response to a request by Federal Emergency Management Agency (FEMA): 'By mid-afternoon November 2nd, more than 3,000 volunteers had assessed 5,131 images, viewing them more than 12,000 times' (Chan 2012). This meant that official response organisations had started to embrace crowdsourced approaches that integrate citizens to response operations. Indeed, earlier that year the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) had led the establishment of the Digital Humanitarian Network (DHNetwork). The Network allows the response organisations to have access to the volunteer community when they are in need and operates as an interface connecting digital volunteers and technical networks with the humanitarian organisations and has the purpose, among other things, to 'leverage digital networks in support of 21st century humanitarian response' (Digital Humanitarian Network 2015).

Media technology and its impact on first response behaviour by citizens
When we turn the attention to new media technologies and their impact on the first response behaviour by citizens, the advantages that these technologies bring is that the content is usually produced and shared by communities of people, rather than commercial and/or government controlled entities (Wilson and Peterson 2012). In practice, the use of online networks helps individuals in different locations, having different occupations to gather and make use of their collective skills and information bases (Rice 1992).

But where post-disaster citizen-to-citizen interaction is not a new phenomenon, with the

'widespread adoption and use of mobile technologies, information seeking behaviour became more visible as the data became more available for people to further seek information' (Baruh et al. 2014:18). Indeed, over the last decade, the primary source of communication during crises is becoming the citizens themselves (Beers 2006). For example, after the Fukushima Daiichi nuclear disaster that occurred in Japan on 11 March 2011, when there were doubts regarding the reliability of governmental sources, citizens used social media to gain information on the possible dangers of the situation they were in. The blog entries by experts among citizens helped the remaining citizens understand the situation and plan accordingly, as they included technical details in a language that regular citizens would be able to understand (Tsang with Komiya 2013).

New media technologies can also help organise action and mobilise people and let them organise themselves, becoming volunteers that can start rescue operations before the responding organisations reach the location affected by the emergency. Indeed, 'the potential availability of real-time information on the location of people (victims) and resources provides important benefits for first response, and dissemination of solutions to problems faced during a crisis' (Baruh et al. 2014: 19). For example, right after the 2010 Haiti earthquake, citizens self-organised and used new media technologies to map the region, organise a fundraiser and find missing people (Ward 2010). Following an earthquake that hit the eastern Turkish city of Van on 23 October 2011, Google's application *Person Finder* allowed citizens to post and receive information about missing people, while a Twitter campaign named *Evim Evindir Van* (My home is your home in Van) received responses from tens of thousands of people who wanted to accept the people who were left homeless after the first few hours of the earthquake into their homes (Turgut 2011). Moreover, by using Twitter, Facebook and donation services, citizens were able to provide equipment, medical aid, and other supplies that were urgently needed by the victims of the earthquake, as well as urge

private organisations to provide disaster relief and help the victims by helping the shipment of aid packages and supplies (Blair 2011). However, new media technologies and applications might also create the risk of overflows of information generated by citizens via social media and other mobile platforms during emergency and crisis situations:

> One of the major challenges of humanitarian response is to adapt to this changing environment and extracting out the informative, actionable and credible information out of unstructured and noisy data generated (Meier 2014).

Comparative analysis of the online presence and media strategies

Following the brief review on the potential benefits that new communication technologies may offer in enhancing citizen involvement in emergency response, this part of the article will aim to summarize the utilisation of various communication and media technologies in the training and coordination of citizens as 'first responders' and discuss the role that 'conventional' media, web, and social media play in citizen outreach programmes and the availability of training materials for the general public. Since the analyses were based on secondary data about the questions raised above, the level of detail for each institution and each country (Turkey, Italy and Germany) analysed may vary as a function of the availability of such data.

Turkey

In Turkey, several government agencies and volunteer organisations actively engage in preparing citizens for emergencies. This analysis includes six governmental and non-

governmental organisations that reach out to and involve (or fail to do so) citizens in emergency preparedness. The organisations involved in this process are: the Prime Ministry Disaster & Emergency Management Presidency (AFAD); the Ministry of Internal Affairs Disaster and Crisis Management Centre (AADYM); the Medical Rescue Team (UMKE), led by the Ministry of Health; the Turkish Red Crescent, which among its other functions, operates the Disaster Management Centre (AFOM); AKUT, the most widely known non-governmental organisation related to natural disasters in Turkey; and the Search & Rescue Research Association (AKA), whose main purpose is to conduct research on emergency response and provide emergency response and rescue services after disasters

Citizen training and participation in emergency preparedness

Among the organisations listed above, AKUT and AFAD stand out in terms of the projects they have developed to raise public's awareness about emergency preparedness and to receive input from them. Since earthquakes have been and are expected to continue to be the most important threat for citizens' safety in Turkey, most of these projects have focused on earthquake preparedness.

AKUT's projects typically address all steps of emergency preparedness and response through education programmes that focus on what precautions to take before, how to act during and what to do in the aftermath of an earthquake. Our research indicates that most of the education programmes that AKUT develops primarily aim to reach youth and students (although other segments of the population are reached via various media campaigns and education programmes). The 'Continue to Live Turkey' project (AKUT 2013), aims to prepare citizens

against disasters by teaching them how to minimise the immediate sources of threat within a household during an earthquake. In this project, AKUT volunteers have visited several cities in Turkey with a van equipped with a G-force earthquake simulator in order to show citizens the difference between a safe room and an unsafe room at the time of an earthquake. The project also shows the importance of the earthquake insurance for recovery after an Earthquake. Another project of AKUT was a musical for children. Through this project, the organisation aims to inform children about the damage earthquakes can cause and how they can take precautions to survive in an earthquake (AKUT 2013). AKUT's other projects include a training programme for high school students to prepare them for natural disasters and a mobile training project that travels around Turkey to educate (so far close to 4000) citizens and personnel working for public authorities. This project is called 'The Anatolian van'. In this project, a movie about how to be prepared for natural disasters is shown to the public in towns across Turkey. In addition to the movie, AKUT personnel also give seminars about earthquakes and distribute handbooks to the citizens (AKUT 2004).

AFAD has also developed several key projects to reach out to both citizens and government employees such as declaring 2013 as the year for informing Turkish citizens for disaster preparedness. With a motto 'Turkey, Prepared for Disasters', AFAD created the 'Disaster Awareness Seminars and Workshops' to prepare citizens and staff of government entities for earthquakes. In another project called 'First 72 Hours', AFAD targeted families, schools and workplaces to enhance the self-sufficiency of individuals and organisations by training them about survival skills and first response within the first 72 hours after a disaster (AFAD 2013a). AFAD also involves individuals from research organisations, universities and other departments with at least a PhD degree to offer their projects/ideas to improve disaster preparation and implementation of disaster recovery/relief efforts (AFAD 2013b). Although

potentially useful in terms of identifying beneficial projects, the exclusion of the remainder of the public may result in a less diverse input for developing disaster preparedness plans. Yet, this effort by AFAD can still be considered as exemplary in terms of creating incentives for the public to contribute to the enhancement of emergency preparedness. Moreover, in a recent contest, AFAD invited amateur and professional designers for design prototypes for shelter tents to be used after a natural disaster. Unlike other projects we have observed, the fact that AFAD includes not only certified experts but also amateurs is worth noting because of the potential to get input from a wider public. AFAD's Centre in Istanbul, with the support of the Istanbul Governor's Office, has another important project called 'The Reduction of Seismic Risk and Crisis Preparation in Istanbul' (ISMEP). The website of this project encourages citizens to take the one hour training of disaster preparation (ISMEP 2014a).

Unlike AKUT and AFAD, partners were unable to gather sufficient information about the details of projects or training programmes that AADYM is involved. However, like AFAD, the website of AADYM provides detailed instructions on what actions to take at the time of natural disasters and how to prepare for them (AADYM 2014).

Like AFAD and AKUT, the Turkish Red Crescent has several projects intended for training and involving citizens: the "How to Live in a Safe Environment with Red Crescent", project teaches middle school students about natural disasters, their outcomes, what should be done for protection and finally what the Red Crescent does in case of a natural disaster in Turkey (Turkish Red Crescent 2013a); the Risk and Capacity Evaluation Project (VCA) project, based in the western province of Izmir, in Turkey, which aims to evaluate the risk people have against natural disasters and how this risk can be decreased (Turkish Red Crescent 2013b); the Basic Disaster Awareness Training (ABCD), a three and a half hour training that aims to

increase the awareness level of the citizens and make the citizens realise that with small measures such as knowing how to organise the furniture for creating a safer place or knowing what to do before and after earthquakes, they can protect themselves against natural disasters (Turkish Red Crescent 2013c); and, finally, the Training for Reduction of Non-Structural Risks (YOTA), which aims to show how citizens can live in safer places against natural disasters. Again, the project aims to teach citizens how small precautions may help reduce the "non-structural" threats posed by earthquakes and decrease injuries.

Again, UMKE and AKA share considerably less information about their training activities. This may either be due to lack of information or lack of projects. Since the scope of this article involves utilisation of secondary data to analyse the activities of major public and private organisations, further studies may be needed to collect primary data in addressing this question. Nevertheless, UMKE collaborates with AFAD to provide seminars and earthquake exercises in several cities. There are also examples of seminars given to hospital personnel about how they should act during earthquakes. UMKE mostly aims to supply citizens with relevant medical information about emergency response.

Likewise, the limited information on AKA website points to a workshop entitled "Society's Disaster Awareness Workshop". In this three-hour workshop, AKA gives information about how people should prepare for an earthquake. In additional trainings, AKA aims to raise awareness of threats posed by disasters and inform citizens about search and rescue.

Training materials

Particularly in instances when workshops are not accessible to large groups of people and when workshops/trainings are organised in a limited number of cities, availability of training materials for citizens becomes a necessity but not a sufficient condition for citizen involvement in disaster preparation. AFAD has twelve different brochures and handbooks that can be found on their website. These publications provide information about topics as natural disasters, the importance of raising awareness against natural disasters, how to be prepared for the first 72 hours after an earthquake, psychological help for earthquake victims, structural risks against earthquakes and non-structural threat mitigation for earthquakes.

AFAD, under its ISMEP project, also offers an online training portal for children. On the website of the ISMEP project a section devoted to children entitled 'Safe Life for Children' offers a wide range of materials including cartoons, animations, games, and quizzes (ISMEP 2014b). Like AFAD, AKUT has nine different books and handbooks to inform people although we can only reach seven of them online. These books focus on topics as the importance of being informed against natural disasters, training children against natural disasters, basic earthquake training, and natural disasters and victims' psychology.

AADYM, as mentioned above, has explanations about how to deal with natural disasters. Unlike others, AADYM provides detailed information about preparedness for floods, droughts, avalanches, fires, terrorism as well as earthquakes. It explains what these disasters are and what to do before and after them (AADYM 2013).

In the case of the Turkish Red Crescent, training materials include brochures, previews of a few journal articles, information about projects, activity reports and five online books that give information about protection against earthquakes both psychically and psychologically,

and first response treatment (Turkish Red Crescent 2014). The brochures on the website are mostly about the projects and they do not provide detailed information for training citizens. In addition, there are some documents about training the personnel of the Turkish Red Crescent. These training documents provide information on topics such as setting up emergency tents and use of portative kitchens. Finally, the Red Crescent releases periodicals that explain how citizens should prepare themselves against natural disasters quarterly. These periodicals provide information about the types of equipment and provisions each household should have. They also explain how a volunteer in a rescue team should be prepared and the types of provisions that should be ready before going to an earthquake region (Turkish Red Crescent 2012).

UMKE offers a large archive of presentations and handbooks on its website (UMKE 2013a). Unfortunately, and unsurprisingly given the mission of UMKE, most of these documents were prepared for medical professionals and are difficult for regular citizens to understand.

Like UMKE, AKA only has information about training programmes on its website. Unfortunately, full access to most of these materials, including videos and other materials, requires membership. This seems particularly peculiar given the mission of AKA clearly states that their goal includes raising the awareness level of 'all members of the society' (AKA 2013).

Use of media and communication technologies

The outreach efforts of the Turkish response organisations involve a considerably wide array of communication media, including mass media as well as social and mobile media. As one of

the leading emergency response volunteer groups in Turkey, AKUT both uses an active YouTube channel (with 43 videos) and had engaged in production of a TV programme in CNN Turk (the Turkish affiliate of CNN) to raise citizen awareness about emergency preparedness and their own projects. In each episode of the TV programme, different kinds of pertinent information were given to the viewers. For example, in one episode, viewers can watch a search and rescue mission, while in another programme, they can learn about how to protect themselves against earthquakes, floods or fires. The YouTube channel also includes videos of AKUT projects such as Continue to Life Turkey. AKUT also shares videos on its own website. AKUT is also highly active on social media. On its Facebook page, AKUT gives detailed information about its operations, trainings and projects. It also has two different Twitter accounts, one in Turkish and the other in English. AKUT's Twitter accounts provide up to date information about training and rescue operations AKUT volunteers participated in.

Like AKUT, AFAD uses videos to inform people about their activities and training programmes. AFAD website has a detailed video archive, which showcases AFAD's human resources and technological capabilities (AFAD 2013c). AFAD also uses its YouTube channel to share videos of their activities with the citizens although the channel not as active as that of AKUT. Maybe one of its important videos is the presentation of AFAD's new mobile disaster information application. AFAD is also involved in a separate project called Secure Life Training Programme. On the website of this programme, detailed information about the project and training programmes is provided. Other publications of AFAD, which provide information about precautions that can help safety during the course of a natural disaster, can be found on its website. The website also has a subsection dedicated to the training of children. In this section, there are education videos, plays, cartoons and quizzes for children (ISMEP 2013). All of this content aims to educate children against natural disasters

and raise the volunteers of the future from young ages. AFAD also has a Facebook page and a Twitter account. Currently, the Facebook page is not active. In fact, some members have posted comments complaining about the lack of activity on the page. At the time of writing of this article, AFAD's Twitter page mostly gives information about the activities of AFAD for refugees from Syria. Consequently, AFAD's social media presence does not seem to provide sufficient attention to disaster preparation. AFAD additionally engages in new and potentially useful utilisation of online and mobile environments for reaching out to citizens. One such outlet seems to be AFAD's mobile application providing detailed up to date information about earthquakes in Turkey. Likewise, in 2013, AFAD initiated a project that will use smartphones and tablets to collect data from citizens immediately after an earthquake. This project aims to record the "magnitude" of earthquakes as "felt" by citizens. The survey will also allow citizens to upload photos illustrating the impact of earthquakes. Combined with data about the Richter scale of each earthquake, the survey and the photos will be used to increase the accuracy and sensitivity of the mapping of earthquakes (Anon. 2013).

Among the organisations that were studied, the Turkish Red Crescent may be the most active organisation on social media. On Instagram and Pinterest, the Red Crescent has several photo albums showcasing their activities such as education, volunteering and natural disaster response. On Twitter and on Facebook, the Red Crescent mostly shares information about their daily activities; however, most of this information is related to blood donation or natural disasters in other places instead of giving specific information about disaster preparation. The Red Crescent also shares its video archive on its website and YouTube channel. This archive mostly contains infomercials regarding its emergency preparedness and response activities in other countries. However, there are only a few videos in which Red Crescent actually discusses emergency preparedness.

The website of UMKE contains information videos, training videos and videos targeting medical personnel in Turkey (UMKE 2013b). UMKE also shares its video collection via its social media accounts such as Google+ and Facebook. In addition, UMKE uses its Facebook and Twitter pages to regularly update citizens about their operations, but most of the content is related to the medical personnel arrangements in the country.

AKA's Facebook page is used for the coordination of the members and to inform AKA members about the regulations and operations. Hence, it is safe to conclude that the Facebook presence of AKA is tailored towards reaching out to existing members rather than the public. Likewise, AKA's video collection only includes two videos about what to do during fires and earthquakes.

Italy

In Italy, the overall management of disasters relief operations and the activities that aim to raise awareness on natural disaster risks affecting the country is the responsibility of the Civil Protection Department (CPD), heading the National Civil Protection Service (NCPS), which includes local, regional and national stakeholders that intervene at their respective levels in case of calamities. The NCPS system includes 2,500 voluntary organisations and 1,300,000 volunteers, 60,000 of whom can be deployed within a few minutes, and 300,000 in a few hours (ISPRO 2013). The volunteers are called to action by their respective authorities, with CPD taking the overall command of operation in case of large disasters. Most of the volunteers who operate locally are equipped with basic emergency relief skills provided at the

local and regional level by the voluntary organisations.

According to Italian law and operative procedures, the protocol expects the Mayor of the municipality where a disaster has occurred to make sure that in the initial moments of a crisis, local relief teams and civil protection volunteers provide the necessary assistance to the population and coordinates the local forces. If local efforts are not enough to cope with the scale of the crisis, then provincial, regional and, eventually, national authorities are asked to take over and coordinate the intervention. In the case of a disaster at the greatest scale, the Prime Minister will assume direct responsibility and coordinate CPD's activities (Civil Protection Department 2013a).

Citizen training and participation in emergency preparedness

The awareness and training projects coordinated by the CPD have been focusing primarily, but not solely, on earthquake risk reduction campaigns, which affect a large part of the country. Projects such as the 'Earthquake – I Don't Risk' campaign (held since 2011) focus on seismic risk reduction and are promoted by the CPD and one of the largest voluntary rescue organisations (ANPAS), in collaboration with the National Institute of Geophysics and Volcanology and the Network of University Laboratories of Seismic Engineering. The campaign aims, among others, to help start 'a process that will put citizens at the centre of seismic risk reduction procedures" and "to prevent and reduce the impact of earthquakes'''. The campaign also has a website: www.iononrischio.it, is disseminated (both in Italian and English) via Twitter, Facebook, YouTube and Instagram (Civil Protection Department 2013b).

Projects organised by the CPD also aim to target the younger population through campaigns like 'I also am the Civil Protection' a School Camp that provides information and awareness on fire prevention and aims to 'stimulate a full and conscious civil protection culture among young people' (Civil Protection Department 2011), organised in collaboration with national and regional voluntary work organisations, and the 17 Italian Regions. ANPAS, one of the largest national voluntary networks in Italy part of the NCPS, which counts 350 offices, 300 emergency response vehicles and 11.000 'active' volunteers, specifically trained for emergencies (ANPAS 2013a), reports that in the last School Camps held in 2013 across the country, 630 students between 9 and 18 years of age have participated in the 24 camps during the summer months. ANPAS highlights how these camps can stimulate a sense of responsibility, active citizenship and sharing best practices of civil protection, and show participants the role that each individual member can be play in the wider context of the NCPS (ANPAS 2013b). All of the projects described above, and coordinated by the CPD, are part of its 'outreach activities to increase the public awareness about natural hazards and to encourage them to improve their own resilience' (OECD 2010: 84).

Training materials

Apart from the projects that aim to reach people in the areas particularly at risk for natural disasters, the CPD and the organisations part of its system publish materials that target also the general public and are available through websites. The CPD has organised a Publications section within the Communications section of its website: these publications include brochures that inform on risks in different areas of Italy, educational material for families and

schools that aim to spread a culture of risk prevention among the general population, as well as training material for civil protection operators. The brochures include topics such as 'Civil protection for families', which outlines the risks present in Italy, makes citizens aware of those risks, and suggest its readers what approach to take in case of small and larger emergencies. The book is available for download as a PDF file free of charge, both in Italian and English (Civil Protection Department 2005).

As for the training that is necessary for volunteers to be part of the NCPS, where the CPD does not provide information about training at the national level, regional or local authorities have developed protocols, guidelines and training modules that address different levels of activity, from basic to complex disaster relief operations, as well as general or more specific functions in a team. Other regional, provincial and local governmental authorities of Italy do organise courses based on the specific needs of their territories, and related risks, and compatibly with the budgets that have been destined to the training of volunteers for civil protection purposes in their areas. Courses can vary from basic risk prevention training for beginners, to more advanced ones aimed at volunteers that live close to landslide, flooding, forest fire and seismic risk areas (EUPOLIS 2013).

Use of media and communication technologies

Italian practitioners are very critical of the fact that the CPD does not effectively utilise social media and crowdsourcing tools, which have been very effective elsewhere (e.g., Haiti Earthquake, Hurricane Sandy in U.S.), with the consequence that citizens are not in the best possible position to be proactive actors in emergency situations. However, dissemination of

awareness materials and training initiatives, although mostly in a web 1.0 fashion, is done regularly across the country.

In terms of social media, to date the CPD does not have an official Twitter account and has only a linked Facebook account related to its magazine, which also includes updates about its press releases and activities, active since 2010. National bodies involved in the management of emergencies do not seem to have a coordinated presence on social media either. Italian blogger Luca Tempestini reports that at the local level the presence on social media as Twitter differs very much, depending on the region of the country (with Toscana, Lazio and Lombardy in the top places), and mostly related to personal initiatives and profiles rather than part of larger institutional strategy (Tempestini 2013).

Among other national bodies present on Twitter, at the date of writing this article, the Coast Guard had 1422 tweets and 2357 followers; the Italian Red Cross 242 tweets and 4496 followers; the State Police only 3 tweets from May 2012, but 4067 followers; ANPAS, 3683 tweets and 1833 followers; and, what seems to be the most effective use of the medium, the National Institute of Geophysics and Volcanology (INGV) has a beta version of its account that includes an automatic feed of all the seismic events in Italy, with 12909 tweets and 100796 followers. With this tool, citizens can be alerted in real time about earthquakes from an official source and have a confirmation about events happened in their area and information regarding the epicentre and magnitude of the seismic event. The absence of the CPD on social media has been widely criticized (Jacona 2012), and in this vacuum, it has been up to social media-savvy citizens to alert the(ir) public about recent events like the earthquakes in Abruzzo in 2009 and in Emilia-Romagna in 2012. New media sociologist Giovanni Boccia Artieri has remarked that, in the case of the Emilia earthquake the first tweet

was done by a citizen, the first advices were given by citizen experts in safety matters and many social media users tried, to the best of their ability, to map the events, providing an effective and geolocalised brief collectively constructed by citizens (in Jacona 2012). Unsurprisingly, as Bologna's municipality contact person for the Digital Agenda, Michele D'Alena, has argued, the level of citizen response, and the usefulness of this response, heavily depends on the extent to which, first, local authorities pay attention to citizen responses and, relatedly, and, second, citizens know that their responses are being paid attention to (in Jacona 2012). For example, in the case of the heavy snowfall in the Bologna area in February 2012, citizens equipped with smartphones and tablets started to share and provide information on Facebook and Twitter with the hashtag #boneve, helping the local authority to direct the intervention through geo-referenced information on the local conditions. In other words, D'Alena suggests, the keyword is participation from both sides, authorities and citizens, to help construct a trustworthy relationship where the latter see themselves as active collaborators. Institutions, when coordinating their social media communications, should also monitor the sources, locate a unique hashtag to combine the information, then select, verify and share all the information that can be useful to the general public (in Jacona 2012). Therefore, the probability that governmental authorities reach out, identify and interact with citizen experts via digital media is higher where there is strong presence of civil protection culture, which is usually associated to levels of volunteerism, and a local government approach to the relationship with its citizens, that is open to listen to them and make a consistent and useful use of inputs given by the public. Where the CPD and the organisations parts of the NCPS have started to make a more comprehensive use of digital and social media potentials for the purposes of awareness and training, there seems to be no structural efforts to make a more comprehensive use of crowdsourcing, geotagging and social media tools at the national level.

Germany

In the case of Germany, the organisational structures that deal with what are called nation-wide 'peacetime disasters', especially floods and storms, are the German Federal Agency for Technical Relief (BTW) and the Federal Office of Civil Protection and Disaster Assistance (BBK), as well as the police and the armed forces, supervised by the Ministry of Interior (European Commission 2014). For large-scale disasters they will be taking over by coordinating efforts with the support of professional and voluntary firefighters, private relief organisations and NGOs. The wide range of NGOs in Germany include: the Samaritans, the German Lifesaving Association (DLRG), the German Red Cross, the Johanniter-Incident-Help, the Maltese Helpservice, the German Fire Brigades Association (DFV), the German Committee for Disaster Reduction (DKKV), the Standing Conference for Disaster Reduction and Civil Protection (SKK) and the Mountain Rescue Experts (Federal Ministry of Interior 2014).

Citizen training and participation in emergency preparedness

For the purposes of this article the authors have looked into the activities of the Floodwatch unit of the German Red Cross, the German Fire Service Association, and the Germany Life Saving Association. The German Red Cross often initiates training courses in order for its members and volunteers to be fully prepared in case an emergency arises. As mentioned above, with several important European rivers passing through its territory, Germany has been

a place where floods are one of the most recurring natural disasters and the Red Cross has a specific sector that deals with the training of citizens in this area. Interested citizens can get prepared for emergency situations, as well as become members of disaster support systems by getting information and training from the Floodwatch team.

Citizen training and participation in emergency preparedness in the German Fire Service Association information is found in the individual states' or cities' websites rather than in the federal website of the Fire Service Association. For example, Berlin's fire-fighters website has two sections that clearly outline the importance and advantages of being trained in emergency preparedness for those tasks where firefighters are usually required for (Berliner Feuerwehr 2014a). In order to increase awareness and enhance emergency preparedness among the public the Fire Service Association focuses on different age groups, including children who are as young as 8 years old, who can take part to the activities organised by the Young Fire Fighters section (Berliner Feuerwehr 2014b). The approach used to motivate adults to join Berlin's Volunteer Fire Brigades emphasizes opportunities 1) to have a hobby that 'makes sense', 2) to learn the basics of active civil protection tasks and be better prepared for emergencies, and 3) to broaden one's horizon (Berliner Feuerwehr 2014c). Promotional materials specifically encourages women and ethnic minorities to be part of it in order to encourage the diversity of volunteers to reflect Berlin's multicultural population. The third body discussed in this article, the German Life Saving Association (DLRG) is also encouraging junior and adult citizens to learn to swim first for themselves but also to help others in situations of emergency (DLRG 2014).

Training materials

The German Red Cross federal webpage has a general section dedicated to first aid and lifesaving operations which describes how citizens can help people that happen to be in a dangerous situation following an accident by enrolling themselves on a first aid course at the nearest Red Cross branch (German Red Cross 2014a). Such training helps citizens perform some basic tasks while emergency services are on the way to rescue or assist the injured person(s). To target the younger population the German Red Cross has also commissioned the development of an interactive website to the consulting company Simpleshow and published the "First Aid Learning Nugget" called "Become a First Aid Hero" in German, English and Spanish (German Red Cross 2014b). Participants of the game are asked to pass a number of tests to prove their skills in helping out people in need of help and are able to share this activity with their friends via Facebook, Twitter and Google+. Traditional handbooks seem to be available only in print and on sale in the German Red Cross e-shop (at the time of writing, this cost about six Euro). There is also the possibility to download, at a cost of 89 Eurocents that help support the German Red Cross training activities, a smartphone or tablet app that provide citizens with a large number of first aid tips in the case of assisting people in emergencies. The same information is available on the "First Aid, Saving and Civil Protection" page of the organisation's website (German Red Cross 2014c). The Floodwatch website has a somewhat limited number of training materials available on its website, comprising tips for self-saving in extreme conditions (Floodwatch 2014a), a four-page abstract on how to deal with cramps when in water (the whole book itself is on sale for 19,80 Euro) (Floodwatch 2014b), descriptive sections with text and related image galleries, as well as a poster for younger audiences using a comic strip style, on how to deal with emergencies and rescue on iced surfaces when a person falls into icy water (Floodwatch 2014c). The German Fire Service Association website has more of an institutional profile, not containing

relevant training materials with the exception of a link to a related e-shop where books on civil protection and self-protection themes can be bought (German Fire Service Association 2014). Berlin's fire-fighters website has mostly information on how to deal with fires, available in German, Turkish, Polish and Russian, with a limited section dealing on how to deal with extreme weather and flooding conditions (Berliner Feuerwehr 2014d). The training material also provides information about how to avoid incidents at home and how to help the fire services to direct their attention to the people more in need during a natural disaster (Berliner Feuerwehr 2014e).

Use of media and communication technologies

When we look at use of media and communication technologies the German Red Cross has Facebook, Twitter and YouTube accounts, as well as a blog and a newsletter to which citizens can subscribe to the organisation's website. The Facebook profile, which had almost 60.000 likes at the time of writing, generally informs about the national and international activities, but has recently published a series of posts on building resilience during disasters in collaboration with the *Disaster Resilience Journal* (Disaster Resilience Journal 2014). On 13 October 2014, coinciding with the International Day of Disaster Risk Reduction (IDDR), the organisation published a post that encouraged its followers to make use of Facebook to spread a culture of awareness and readiness for disasters (UNISDR 2014). This involved preparing a package and listing three items that one would bring, taking a selfie with such objects, publishing it with the #myDRJ hashtag, finally nominating three more friends. The Twitter profile of the German Red Cross basically mirrors the Facebook page, although adjusted to the 140-character format. It was initiated in May 2009, and as of October 2014, has 21.000

followers and 1.700 tweets. The YouTube page, created in March 2009, has just over 400.000 visualisations and 1.100 subscribers to date and has more of an institutional profile that shows the activities (mainly its international activities and projects) of the Red Cross in 3 minutes and a few video clips on self-help in emergencies. Similarly, Floodwatch uses social media to disseminate information on the organisation and alert citizens in case of emergencies. As shown below, their accounts are not used that often, Twitter has 401 followers to date and 115 tweets since 28 November 2009. Facebook has 6203 likes. The Fire Service Association is more involved in social media than the Red Cross and constantly updates its accounts on Facebook and Twitter with news on their activity, warning civilians about imminent emergency incidents and informing them about recruitment drives. The German Life Saving Association also uses social media to promote its actions. Its Facebook page has just over 21.000 likes to date and is mainly used to inform about the activities of the association. The organisation did not have a Twitter profile at the time of writing this article. It does have a YouTube page containing mainly reports about its activities across the country with just over 81.000 visualisations and about 386 subscribers to date.

Conclusions

The increased penetration of communication technologies and social media applications presents important opportunities for emergency preparedness and response. One such opportunity concerns the incorporation of citizens into emergency communications, preparedness and response. Additionally, the rise of self-publishing applications and mobile recording devices can potentially transform individuals from passive consumers to producers and distributors of information, thereby contributing to the information environment during an

emergency. The networking capabilities offered by new communication technologies also mean that citizens— in their role as emergency response volunteers—can organise and coordinate their actions more efficiently.

Given these potential benefits brought about by communication technologies in enhancing citizens' involvement in emergency communications in general, and emergency preparedness, mobilisation and response in particular, the aim of this article was to examine the role that media technologies may play citizens' involvement in emergency communications.

Citizens' involvement in emergency response via social media can potentially supplement existing data about emergencies with crowd-sourced information. Citizens can also contribute to filtering and making sense of existing information for emergency response functions such as by crisis mapping. Emergency response training can be made easier, more accessible and engaging for the public through the use of utilities like simulation games, interactive applications, or virtual reality. While conventional methods of emergency preparedness training, such as workshops, training videos or pamphlets are still dominant in the countries we analysed (Turkey, Italy and Germany), volunteer organisations and government agencies use various communication methods actively to recruit and train rescue volunteers. While community involvement is considered as an important goal across all countries we analysed, the type of involvement is typically an asymmetric one in that response organisations and government agencies see citizens as stakeholders that need to be trained but do not pay sufficient attention to soliciting intelligence from the public to improve emergency response. One notable exception that we observed was AFAD in Turkey, which has, in different occasions, created calls for projects for design and implementation ideas for earthquake preparedness from regular citizens (and not solely experts, academicians and researchers). Across all different countries, one important problem we observed was the inconsistent

accessibility or lack of availability of training materials online, and particularly on social media. This may reduce the likelihood that a large portion of the population, mostly of younger age, will have the opportunity to stay informed on important safety topics.

Acknowledgements

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