CARISMAND
Culture And RISk management in
Man-made And Natural Disasters

Culture and disaster risk management - Citizens' reactions and opinions during Citizen Summit in Bucharest, Romania.

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1. Introduction

The analyses and results in this document are based on data collected during the first CARISMAND Citizen Summit held in Bucharest, Romania, on July 9th 2016. The Citizen Summit was designed as a 1-day event combining public information with feedback-gathering through different methods of data collection: (1) 30 questions with pre-defined answer options posed to the audience and collected via an audience response system; and (2) small moderated group discussions of approximately 1.5 hours duration which followed a detailed set of questions and discussion guidelines, including (3) a short association exercise. All questions and discussions aimed to explore citizens' attitudes, feelings and perceptions towards disaster risks as well as the identification of cultural factors in disaster preparation, response and recovery. Their definition and design was based on a literature review, preliminary research results from other work packages, and taking up specific topics identified in the 1st CARISMAND Stakeholder Assembly. For a detailed overview of all questions asked and topics discussed please see Appendix A.

Overall, 110 citizens participated in the Bucharest event. The total sample shows a relatively even gender and age distribution, which is unsurprising given the target quotas[1] which were requested from the recruiting local market research agency. The comparatively low number of senior citizens aged 65 and above was expected and reflects mobility issues.

Table 1

Distribution by age and gender

Total	Gender			Age Groups						
	Female	Male	No answer[2]	18-24	25-34	35-44	45-54	55-64	65+	No answer
110	54	51	5	22	23	19	27	13	4	2

Participants were asked about three key aspects of experience of disasters and disaster risk perception that could potentially have an impact on how other questions were answered[3]. More than nine out of ten respondents indicated that they, or a close friend or family member, have experienced a disaster, 68% felt that they are living in an area that is specifically prone to disasters, and 78% answered that they know other people in the area where they live who they think are particularly vulnerable or exposed to disasters. Slight gender differences were found to be not statistically significant (p>=.05).

Table 2

Disaster risk perception I

		Answer=YES		
		Total	Female	Male
Q1.3	Experience of disasters	91.8%	92.6%	90.2%
Q1.4	Feel that living in a disaster area	68.2%	70.4%	70.6%
Q1.5	Know of vulnerable groups particularly exposed to disasters	78.2%	83.3%	76.5%

Q1.3: Have you, or a close friend or family member, ever experienced a disaster?
Q1.4: Do you feel you are living in an area that is specifically prone to disasters?

[1] Target gender split: 50% female / 50% male; target age split: 20% 18-24 years, 40% 25-44 years, 40% 45+ years; total target of 100-110 participants per Summit.
[2] In each question, the participating citizens were given the answer option "choose not to say".
[3] These questions formed part of the recruitment criteria to ensure a good mix of levels of experience for the discussions about disasters.

Q1.5: Do you know of any other people in your area where you live who you think are particularly vulnerable or exposed to disaster?

This report presents the results of the first CARISMAND Citizen Summit and is structured in six main sections: After this introduction, the second section will provide an overview of the different methods applied. The third section, based on the quantitative data collected via the audience response system, presents the results from questions on general disaster risk perceptions, disaster preparedness, and behaviours in disaster situations, the latter with a particular focus on the use of social media. The fourth section, based on the qualitative data collected in the discussion groups, will analyse the participants' risk perceptions and behaviours related to (a) different "features" of disasters, in particular related to slow/fast onset, short/long-term effects and the "visibility" of disasters, and (b) different disaster phases. Furthermore, this section will report on the different cultural aspects and cultural groups identified by the participants, the specific needs of such groups, and perceived community strengths and weaknesses in case of a disaster. Additionally, it will provide insight into participants' views on measures that may help to improve disaster preparedness and response. The fifth section focuses on risk perception in relation to causes of disasters, in particular the blurred distinction between natural and man-made disasters. The final section compared and contrasts the results from sections 2, 3 and 4, draws some tentative conclusions, and identifies topics and issues that should feed into the next round of events in 2017, i.e. the 2nd Stakeholder Assembly as well as the 3rd and 4th Citizen Summits.

2. Methodology

Participants for the Citizen Summit were recruited via the largest independent market research agency in Romania[4], following a recruitment questionnaire (see Appendix B) which aimed at achieving an even gender and age distribution as well as a minimum proportion of participants fulfilling certain criteria such as having experience of disasters and using social media. All documents, i.e. recruitment questionnaire, consent form, Powerpoint presentations and focus group discussion guidelines were translated into Romanian. Accordingly, the Citizen Summit presentations as well as the group discussions were held in Romanian, aiming to avoid any language/education-related access restrictions for participation and allowing citizens to respond intuitively and discuss freely in their native tongue. For this purpose, simultaneous interpreters as well as professional local moderators were contracted.

Overall, 30 quantitative questions were posed during the presentations to the general audience, 24 before the group discussions, and 6 after. The participants' immediate responses were captured via an audience response system[5] which allowed immediate feedback of the results to the participants via Powerpoint. After the event, all data were exported into a database for further analyses. All data in this database are fully anonymous. Although keypad ID's were assigned to participants during the registration process to enable retrieval of the devices at the end of the event, WP5 team members were not involved in this process and had no access to the registration documents. Additionally, after data export, random new ID's were assigned to all data sets. All analyses were conducted with SPSS Version 24.0 and significance tests were run for all results.

After the presentations and questions, the audience was split up into smaller groups of 11 participants each with an even gender split. Two groups consisted of participants aged 18-24, four groups of participants aged 24-44, and four groups of participants aged 45+. This division into age groups aimed to allow participants to discuss amongst peers with similar life-experience. All group discussions were audio-recorded, fully transcribed and translated into English. In this process, all participant names and personal identifiers were removed to ensure the participants' anonymity. The resulting English transcripts were coded following a preliminary coding framework which allowed an initial structuring of the vast amount of collected data. Then, all transcripts were re-coded theme by theme, summarising specific processes and practices or constructions and interpretations. This process of re-coding also initialised a critical restructuring and rethinking of the codes applied first, and allowed a more focussed data analysis.

The association exercise was conducted in the beginning of the group discussions, asking participants to write down anonymously on a sheet of paper the first three disasters (outside their own country[6]) that come spontaneously to their minds. These papers were immediately collected by the group moderators to ensure that only immediate associations were recorded and no data added or amended later during the group discussions. The resulting associations were transferred into a database and categorised by age group and type of disasters. Additionally, different weights were assigned to each associated type of disaster depending on its ranking[7], and the descriptive results were triangulated with the other quantitative and qualitative data related to disaster types and risk perception.

[4] Mercury Research (http://www.mercury.ro).

[5] Clik-a-pad system with ppvote software; for further information see http://www.clikapad.com.

[6] The decision to ask for disasters outside the respective participants' home country aimed to explore what type of disasters are associated first, rather than those that are "closest".

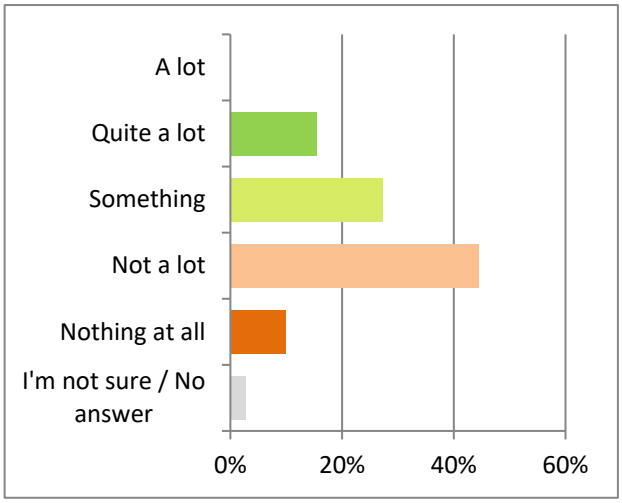
[7] The type of disaster associated first was given a weight of "3", the one associated second a weight of "2", and the one associated third a weight of "1". If a participant associated four or more disasters, only the first three were transferred into the database.

3. Quantitative Data Analysis

3.1 Disaster preparedness

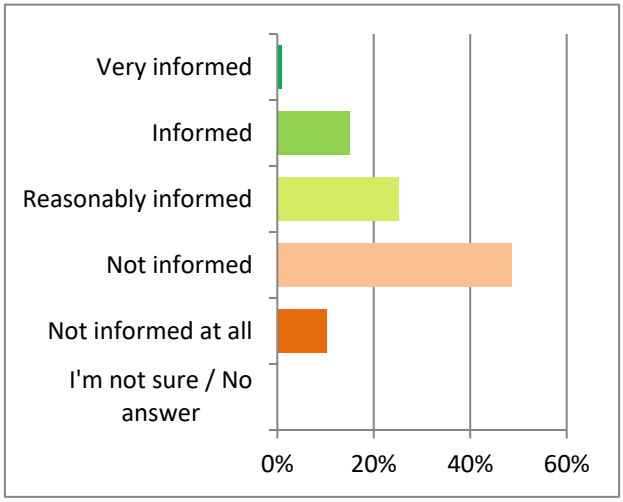
Generally, participants of the Bucharest Citizen Summit expressed a strong lack of knowledge about the guidelines and procedures their local disaster management authorities are following, with 55% of respondents indicating that they know not a lot or nothing at all. In addition, they also indicated that they feel even less informed about what to do themselves in case of a disaster, with 59% of respondents feeling not informed or not informed at all about what to do in a disaster.

Figure 1
Knowledge of disaster guidelines & procedures



Q1.8 – How much do you know about the guidelines and procedures your local disastermanagement are following in case of a disaster?

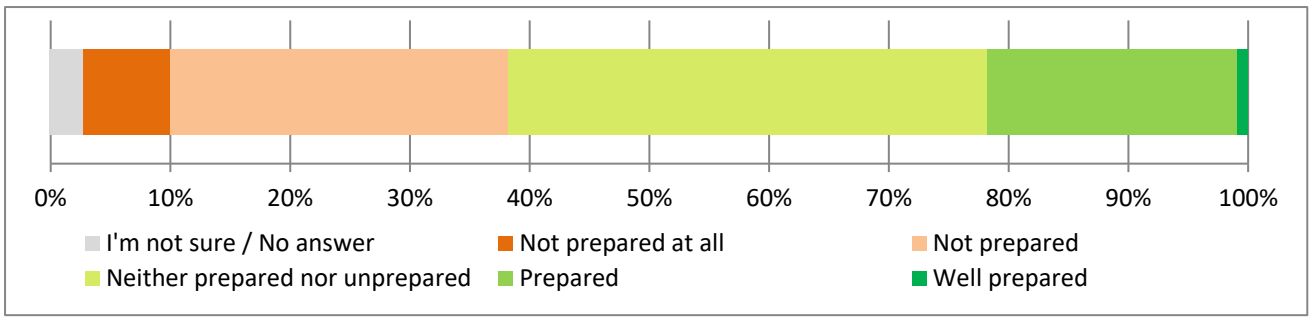
Figure 2
Feeling informed about what to do in a disaster



Q2.3 – How informed do you feel by the authorities of what you have to do in case of a disaster?

Whilst the results of these two questions show only a moderate correlation, there is a stronger relationship between respondents feeling informed, or not informed, about what to do by the authorities, and feeling personally prepared for a disaster in their area. More than one out of three participants (36%) expressed their feelings of not being prepared or not being prepared at all, whereas only about one out of five (21%) feel prepared or well prepared.

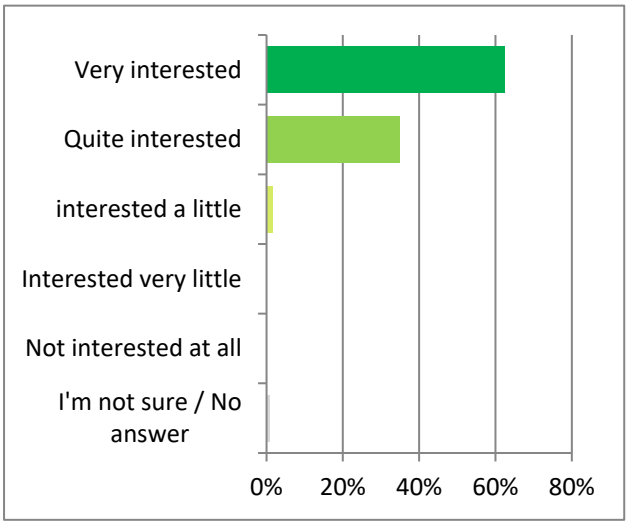
Figure 3
Feeling personally prepared for disasters



Q1.10 – How well do you personally feel prepared for a disaster in your area?

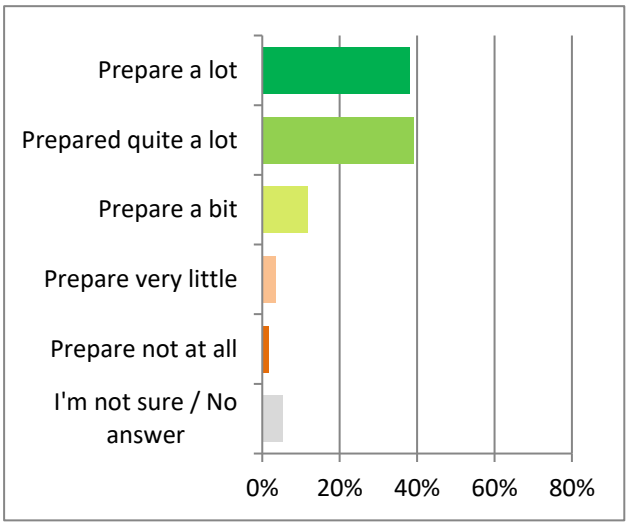
At the same time though participants expressed their considerable interest in information about disaster preparedness, with 97% of participants indicating they were quite or strongly interested. Additionally, more than three out of four participants (76%) indicated strong intentions to prepare for disasters (prepare quite a lot or a lot).

Figure 4
Interest in information about disaster preparedness



Q1.9 – How interested are you in information about disaster preparedness?

Figure 5
Intentions to prepare for disasters



Q1.11 – To what extent do you intend to prepare for disasters?

There were no statistically significant differences between female and male responses to all questions related to disaster preparedness, or to previous experience with disasters (responses to Q1.3 and Q1.4), as well as between responses by different age groups.

3.2 Disaster risk perceptions

Participants were asked about their perception of the risk of disasters at different points during the Citizen Summit in order to measure the potential effects of information and/or visual cues[8], in particular the videos and pictures of various disaster simulation exercises.[9] The results indeed revealed such effects: Before showing the video, female participants were slightly more worried than male participants about disasters in the area where they live (see responses to Q1.7 in Table 3 below); after viewing the videos and pictures, there is an increased concern about disasters in their area whilst the difference between female and male participants is not statistically significant anymore (see responses to Q2.2 in Table 3 below). However, this increased concern coincided with 32% of participants finding disaster simulations as shown during the Citizen Summit important and 68% finding them very important, which suggests that being aware of simulation exercises may increase disaster risk awareness but, at the same time, this is appreciated.

Table 3

[8] In order to achieve adequate internal consistency but without using exactly the same wording, these questions are based on the 5-item measure developed by Kellens et al (2011) with a Cronbach's Alpha of 0.80 for the perception of flood risk, adapted to disasters in general (see Kellens, W., Zaalberg, R., Neutens, T., Vanneuville, W., & De Maeyer, P. (2011). An analysis of the public perception of flood risk on the Belgian coast. *Risk Analysis, 31* (7), 1055-1068).

[9]The disaster simulation exercises featured an accident in one of Bucharest's subway stations (2015), two plane crashes (2015) and the explosion of a gas transport vehicle in the parking lot of a large shopping mall, causing fire and partial building collapse (2016). Videos and pictures were provided by the Romanian emergency rescue service SMURD - Serviciul Mobil de Urgență, Reanimare și Descarcerare.

Disaster risk perception II

		Total		Female		Male	
		Mean	STD	Mean	STD	Mean	STD
Q1.7	Worried about disasters in my area	3.92	0.885	4.06	0.873	3.80*	0.849
Q2.2	Concerned about disasters in my area	4.23	0.765	4.21	0.817	4.27	0.750
Q4.2.1	High risk of natural disasters in my area in the next 3 years	3.32	0.823	3.41	0.805	3.23	0.857
Q4.2.2	High risk of man-made disasters in my area in the next 3 years	3.43	1.008	3.48	0.913	3.46	0.994

How much do agree, or disagree, with the following statement (5-point Likert scale with 1=totally disagree, 5=totally agree):
Q1.7: I am worried about disasters in the area where I live.
Q2.2: When I think of disasters in my area, I feel concerned.
Q4.2.1: I think there is a high risk of a natural disaster happening in my area in the next 3 years.
Q4.2.2: I think there is a high risk of a man-made disaster happening in my area in the next 3 years.
Note: Results in this table marked with an asterisk (*) signify that the results between males and females are statistically significantly different ($p<.05$). Other differences between males and females are not statistically significant. There are also no statistically significant differences between age groups.

At the very end of the Citizen Summit, i.e. after the group discussions, participants were asked again for their risk perception, this time with a specific focus on the near to medium future (the next 3 years), and differentiating between the risks of natural and man-made disasters. The results show that participants perceive no statistically significant difference between the risk of natural disasters and the risk of man-made disasters. However, for both "categories" more participants agree than disagree that there is a high risk of a disaster happening in their area in the next 3 years.

3.3 Behaviour in disaster situations

More than two out of three (69%) of all participants in the Bucharest Citizen Summit indicated that in case there was a high risk of a disaster happening soon and they would feel this disaster may cause serious harm, the first thing they would do is call the emergency services; 21% would first call their family and friends. Being asked for the second thing they would do, 46% would call their family and friends, 18% would call the emergency services, and 9% would turn on the television or radio (see also Table 6 below), with no statistically significant differences between female and male responses or between age groups.

Although 94% of the participants stated that they do use social media[10], in an emergency situation it appears that the use of social media usage is not the preferred immediate response. Only 2% responded they would use social media to inform family/friends, submit information to authorities or gather more information for themselves as their first priority. It is the second priority of 14%.

[10] Compared to 100% who stated that they use a mobile phone.

Table 4

First and second reaction in case of a disaster

Q2.4 Imagine that a situation in which there is a high risk of a disaster happening soon, and you feel this disaster may cause serious harm to your family or friends. What is the first / second thing you would do?	First	Second
Call the emergency services	69%	18%
Call family / friends	21%	46%
Go to your neighbours	1%	2%
Use social media to inform family / friends	1%	4%
Submit information via social media to authorities	1%	10%
Get more information via the internet	2%	3%
Get more information from social networks	0%	0%
Turn on the television / radio	1%	9%
Other / not sure / no answer	4%	8%

_____

Note: There are no statistically significant differences between female and male responses, or between age groups.

However, this picture changes in the case of an on-going disaster, where social media usage was indicated as rather likely. Almost nine out of ten participants indicated they would be likely or very likely to use social media to stay in contact with others, and about four out of five would inform themselves via social media, warn or inform others or family and friends, and provide help to others through social media. The likelihood of submitting information to local authorities was slightly lower. Nevertheless, 71% of respondents indicated it as likely or very likely that they would use social media to submit information about disasters to the authorities, whilst 9% responded that this is unlikely or very unlikely.

Table 5

Social media use in disasters

		Total	
In the case of an ongoing disaster, how likely are you to use social media to…		Mean	STD
Q3.3.1	Inform oneself about the disaster	4.00	1.155
Q3.3.2	Submit information about disaster risks/disasters to local authorities	3.93	0.938
Q3.3.3	Warn or inform other social media users	4.10	0.854
Q3.3.4	Warn or inform family and friends	4.14	1.108
Q3.3.5	Stay in contact with others	4.27	0.788
Q3.3.6	Provide help to others	4.15	0.998

_____

Answers measured on a 5-point Likert scale with 1=very unlikely, 5=very likely)

Note: There are no statistically significant differences between female and male responses, or between age groups.

4. Qualitative Data Analysis

4.1 Disaster preparedness

At the beginning of the focus groups discussions, the majority of participants across the different age groups agreed that there would be little or no time at all to prepare for fast onset disasters, e.g. earthquakes: "*Not even one minute. Thirty-forty seconds"* (G6; 25-44 yrs)[11], whilst slower onset disasters were seen to enable more time to prepare, particularly when there was the ability to predict or forecast the incoming disaster: "*Theoretically they have several days, because it would have to rain for at least 4-5 days to cause such a strong water surge"* (G1; 18-24 yrs).

Long-term disaster preparedness was seen as primarily being a responsibility for national and local authorities in ensuring that the environment and infrastructure are able to withstand disasters: "*Prevention could be done long before the event occurs, maybe years before, of course involving the state, city hall or the types of organization"* (G2; 18-24 yrs). In particular, participants addressed the need for ensuring that infrastructure is resilient against the types of disasters which are likely to occur in Romania, for example, earthquakes and floods: "*They deforested and they exposed themselves to floods"* (G10; 45+ yrs). A number of participants felt that there were vulnerabilities in infrastructure due to poor building standards, sometimes linked with perceived corruption (i.e. man-made factors), which meant that the participants felt they were not as prepared for disasters as they otherwise could be:

> *"Regarding the manner in which building permits are issued, because buildings appear overnight, and I was talking to a building site supervisor and he told me that they don't stick to the time required to dry the concrete because they want to finish faster, but all these buildings couldn't survive an earthquake, because we build quickly and poor quality."* (G3; 25-44 yrs)

National and local authorities and non-governmental organizations (NGOs) were further identified as being at least partially responsible for providing information and education to citizens in how to act in response to a disaster: "*I mean first of all the authorities need to be prepared"* (G4; 25-44 yrs), "*I have a French citizenship and the French embassy regularly sends us emails of addresses of where to go in case of a fire, in case of a catastrophe*" (G9; 45+ yrs), "*In the countryside where I am from, I am not from Bucharest, all sorts of people came and inform us, from the Local Police, from the Inspectorate for Emergency Situations and so on, the Red Cross did quite a lot"* (G1; 18-24 yrs). In this context, participants referred to local training courses for first aid as to how people can prepare themselves, alongside disaster simulation and information campaigns conducted by authorities to help inform citizens on how to prepare and respond to a disaster: "*12 volunteers gathered, and SMURD [Serviciul Mobil de Urgență, ReanimareșiDescarcerare[12]] held a few survival courses, heart massage, mouth to mouth resuscitation on dummies and I think it was efficient for them"* (G2; 18-24 yrs).

However, the participants did not merely hold passive attitudes towards disaster preparedness measures, but also discussed a number of strategies taken at the individual level for disaster preparation, related to how the participants may actively seek to inform themselves and others: "*I could say I'm one of the fortunate ones, I took a disaster readiness class just before the holiday, and I also learned first aid, so it's also a matter of how open each person is, if you're interested in that and wish to learn new things and be safe when the time comes"* (G4; 25-44 yrs), "*to help each other, to know how to react and how to proceed after the earthquake"* (G7; 45+ yrs). A number of participants also sought to prepare themselves for a disaster through having an 'emergency

[11] Group 1; this form of abbreviation will be used for all quotations.
[12]The Romanian Mobile Emergency Service for Resuscitation and Extrication.

kit' which comprised of essential items of use in a disaster situation: "*What she is talking about is an IGSU*[13] *recommendation that we should have bottled water, canned food, flashlight, batteries"* (G7; 45+ yrs), "*I'd have everyone stock resources at home just in case"* (G1; 18-24 yrs). An interesting element of preparedness was identified by a small number of participants who suggested the need to be physically fit as part of a preparation for disasters: "*Maintaining your own health and being healthy, not being ill"* (G2; 18-24 yrs).

4.2 Disaster risk perceptions

In considering risk perception regarding disasters, participants referred to the perceived impacts of the disasters: "*A nuclear disaster could kill more people than an earthquake"* (G3; 25-44 yrs). Some participants felt that some types of disasters had little impact on their daily lives and, therefore, they did not see them as a particular risk, for example, heatwaves: "*Yes, because I don't perceive it as being as dangerous, we didn't have it so bad [...] by the time it becomes really bad we will be long gone"* (G3; 25-44 yrs). Those disasters seen as having a greater impact were further associated with greater risk, for example as in the case of nuclear disasters: "*You can't get away from radiation, can't run or protect yourself"* (G6; 25-44 yrs). Participants made further assumptions about the ways in which fellow citizens perceived risk in disaster situations and felt that in some circumstances citizens would ignore on-going disasters or would not respond appropriately to warning signs: "*They do not heed warnings from the authorities*" (G1; 18-24 yrs).

Prior experience of disasters was referred to in shaping perceptions of risk by participants[14]: "*Knowing you are in an area at risk, you expect it at any moment because they are not scheduled, earthquake on day x at hour y, beware"* (G2; 18-24 yrs), with particular references to Romania's seismic activity and experience of earthquakes: "*Because I lived through an earthquake, I am very afraid of an earthquake"* (G9; 45+ yrs). Invisible effects were also linked to risk perception in how individuals may judge the seriousness of a disaster: "*Solar radiation is stronger these days and can cause cancer and a lot of other diseases, it's not something you can see instantly, like an earthquake, or a building that fell and you died"* (G3; 25-44 yrs).

Furthermore, the frequency of disasters affected participants' fear and worry of disasters: "*I think that we'd all be worried, but I think that their frequency would also matter a lot"* (G3; 25-44 yrs). However, for some participants the impact of a disaster was seen as being forgotten over time, potentially due to the frequency of the disaster impacting upon the awareness of risk: "*At least once a year you were reminded how big the 1977 earthquake was and what havoc it wrecked and how you should protect yourself. Knowing how to be on guard somehow, but lately this has faded"* (G5, 25-44 yrs).

Other participants felt that there was a more 'fatalistic' attitude whereby disasters were seen as fate and that there was little that could be done to prepare for or prevent them; rather participants saw themselves as enduring disasters, as they had other crises:

> *"Some people are fated to live directly like that and then you have to simply accept it."* (G1; 18-24 yrs)
>
> "*The probability of an earthquake happening during the day is smaller than that of happening during the night, they usually happen during the night and we are completely unprepared. And completely helpless, all you can do is wait and see what happens afterwards."* (G4; 25-44 yrs)

[13] Inspectoratul pentru Situații de Urgență (Inspectorate for Emergency Situations)

[14] In many cases, the participants spoke more about the emotional components (e.g. feeling of safety) than about the cognitive components (perceived risk) of security and insecurity in relation to disasters. However, in everyday language this distinction is often not made.

Participants identified 'safe spots' which were seen as reducing the level of risk and vulnerability to the effects of a disaster situation: *"…we stop for a few seconds to find out whether it is actually an earthquake or not. And if it's really an earthquake we head towards the door frame and this happens frequently"* (G1; 18-24 yrs).Such 'safe spots' reflected the types of disaster, for example, in a heatwave a 'safe spot' may be seen as a place where the heat affects you less: "*I think you can escape the heat. You dig a hole, a basement, you have water, some shade, trees, to take shelter*" (G5; 25-44 yrs). Alternatively, participants felt that some areas of their environment may also increase risks related to disasters in general:

> "*I work in the historical center... when I go by every day and look at the buildings I think to myself God forbid... there doesn't even need to be an earthquake, it's enough for a large car to pass through the center and ... those buildings are barely standing."* (G5; 25-44 yrs)

4.3 Behaviour in disaster situations

The initial behaviour anticipated by the participants in response to a disaster situation was to stay calm and maintain control: "*First of all we shouldn't panic, I think that's the main issue*" (G2; 18-24 yrs), "*It's about self-control, we should be able to control our panic state and turn it into a great deal of calm to figure out what we are going to do*" (G8; 45+ years), although they disagreed whether or not they would panic in a disaster situation: "*It was the panic, that's more dangerous, an announcement like this is the most dangerous announcement*[15]" (G3; 25-44 yrs). They also referred to prior disaster experiences within living memory[16] where panic, in their opinion, did occur as an initial response to a disaster:

> "*Wasn't there an earthquake two-three years ago? There were earthquakes. They scared my children [...] When I opened the apartment door, believe me, all I could hear was shouting, there was one lady who was exaggerating […] that is how you end up with mass hysteria and panic.*" (G5; 25-44 yrs)

Participants felt they would first seek to ensure their own well-being and safety: "*I say that first of all, we first take care of our life, so the first thing we think about is ourselves, because you can't really do anything for others during that time"* (G8; 45+ yrs). Participants sought to ensure their own well-being through finding a secure location in their immediate environment, for example in response to an earthquake: "*If you are at home, you go under the doorpost"* (G3; 25-44 yrs) or evacuating to safety: "*but in any case if I have enough time, I'd leave the house because I live in an apartment building"* (G9; 45+ yrs).

Participants expressed fear and concern for the well-being of their families and loved ones in disaster situations, and sought to remove them from the risk of harm: "*I personally would take my family and wouldn't remain in the city, in that city, I don't know at what level the disaster would be, how large it would be, but I would leave the place after I gathered my family"* (G4; 25-44 yrs). Participants discussed how they would check with their family and loved ones to see if they were safe and to let them know that they were okay: "*Of course I will call my son and my daughter-in-law, my child, my friends"* (G10; 45+ yrs). Participants also stated that they would notify authorities: "*I'd call a hospital or I'd try some of the other emergency numbers I have in my phone, I am more cautious, that's my nature, and I thought you never know, so I'd call and maybe get some advice on what to do*" (G4; 25-44 yrs).

[15]The participant here was referring to an early warning system stating that an earthquake might happen.
[16] Earthquakes occurring from 1977 onwards.

Participants outlined a variety of ways in which they would volunteer to help in disaster situations, some of them referring to previous experience in disaster situations, from providing first aid and medical support: "*I went to donate blood three times for some special cases"* (G6; 25-44 yrs), to providing physical support: "*You know, in '77 after the earthquake I even dug graves"* (G7; 45+ yrs).They also suggested fund raising and that the local community could offer ideas on how to aid recovery: "*They come up with ideas, they each come up with a constructive idea"* (G3; 25-44 yrs). On the other hand, some participants felt that they would not be able to provide support as they may not know how to respond, do not particularly want to help, or are physically unable to provide support: "*I don't think there is anything I can do to help the community, I don't know […] I mean, what can I do to help?*" (G6; 25-44 yrs).

Participants also addressed concerns that they should help support authorities in relief efforts and try not to obstruct or hamper them: "*To obey[…], offer our services and obey directions*" (G1; 18-24 yrs). Alongside helping to provide first aid one participant in particular also outlined how they would use their skills to inform others about the disaster and help disaster victims to find and communicate with their families through social media:

> *"I would provide first aid and after first aid was provided, by the authorities as well, inform people using all the possible and available means that work at the time, depending on the disaster, about the risks that still exist in the area. There may be roads, people who can't find their families and I'm thinking that I would help gather data about the identity of people and publishing them, of course with their approval, but I'm sure that is what they want, to find their families. On facebook, twitter, any social network, any available message that is accessible at the time, that is what I would do."* (G2; 18-24 yrs)

A number of short- and long-term effects were identified as resulting from a disaster, with a particular emphasis on individuals' long term mental health: "*Any calamity like that stays imprinted in your mind for life*" (G3; 25-44 yrs), and financial and economic impacts on an individual: "*Psychologically it's very hard to recover, materially maybe even harder. Now it depends, it depends on what savings each person has"* (G8; 45+ yrs). Further some participants felt that"*you'll never recover"* (G4; 25-44 yrs). As part of the recovery phase some participants felt that there was a need for provision of shelter to affected individuals, and showed initiative in helping to take responsibility in providing this: "*Then there is the need to provide food and shelter for those people who have to organize themselves, if I have no place for them to sleep, I should erect a tent or something"* (G5; 25-44 yrs).

4.4 Cultural groups, cultural aspects and the role of community

Three main groups were initially identified as being particularly vulnerable to disasters: the elderly, children and young people, and those individuals who have physical or mental disabilities or who have general poor health. Very young children, babies in particular, were seen as being highly vulnerable due to their reliance on their family during disaster situations: "*They cannot perceive the danger, they are not aware at all"* (G4; 25-44 yrs). Another group identified as vulnerable were orphaned children as these were seen as lacking support. Elderly individuals who live alone and do not have support from their families were also seen as vulnerable, along with those elderly individuals who may refuse to leave their home in the event of a disaster, potentially placing themselves at greater risk: *"In 2005 when we had floods, in 2005 we had old people… they didn't want to leave their homes even dead, the poor firefighters and gendarmes were struggling to take them away by force, and the water had reached 2.5 meters"* (G7 45+ yrs). A number of other vulnerable groups were also identified including homeless individuals, patients, those individuals with a low socio-economic status or without insurance, and those who were in locations seen as being prone to disasters.

Further discussions pointed at more specific groups who may be vulnerable to disasters, including those who lack awareness and education about how to respond to disasters and those individuals who may refuse help in a disaster situation: "*There are frequent landslides… although the city halls wanted to relocate them, they don't want to move and prefer to lose their households, lose their money, lose their lives, a lot of them have died, they didn't want to leave"* (G9; 45+ yrs).

One discussion group identified individuals whose inertia to take care of security-related maintenance measures was seen to make them a potential vulnerable group: "*There can also be the lazy people who don't check their [electricity] substations, I know cases of people who lie that they aren't home when someone comes to check their substation"* (G3; 25-44 yrs), or those who were seen as potentially vulnerable through creating their own vulnerability, for example, through illegal adjustments to their homes: "*There were a lot of cases of houses exploding because of all these improvised heating systems"* (G3; 25-44 yrs).

Elements of individuals' lifestyles were also seen as increasing vulnerability to disasters, particularly in the previously identified vulnerable groups. For example, during a heatwave: "*I use my car a bit more and for example at two o'clock when it's hot and I see old people, who have no business being out"* (G8; 45+ yrs).In particular working conditions were perceived as placing an individual at greater risk: "*The situation is different for them [the workers at Fukushima], they were predisposed, because whoever works in a toxic environment knows that there is this possibility, they keep this in mind when they get a job there"* (G2; 18-24 yrs). There was also widespread awareness of the effect of heatwaves on working conditions: "*If you work somewhere where you are exposed, you have to take a break in the periods of peak heat"* (G8; 45+ yrs), "*If they issue a warning and I'm 43 years old and I go to work in the fifty degree heat, and have no proper conditions there, I will also fall apart, even if I'm young, not in my eighties"* (G6; 25-44 yrs).

At local community level, a number of participants felt that having a 'sense of community' was a major strength in responding to disasters, and if there was a disaster people would help each other: "*If there were a disaster, we'd get involved"* (G6; 35-44 yrs). Some participants felt that where this was lacking there would be weaknesses in how people respond: "*Lack of communication, animosity, rivalry"* (G9; 45+ yrs). Generally, the group discussions revealed perceived differences between urban and rural populations, with urban populations seen as lacking a sense of community, although authorities may be closer to help with responding: "*We don't have any civic sense here. The only advantage is that everything is closer and the authorities get here faster"* (G3; 25-44 yrs). Rural populations were seen by some participants as having a stronger sense of community: "*In the cases of disasters in the country, in towns, in small communities there is a cohesion and they help each other even when harvesting crops, why wouldn't they help each other during floods, they work together*" (G5; 24-44 yrs). Although intervening effectively in rural areas may prove challenging: "*Until the authorities arrive in the mountainous area […]it takes a long while, if you are snowed in, or there's an accident, it takes a long time to get there, you saw how long it took to reach the crashed plane"* (G10; 45+ yrs).

However, beyond stereotyping, one participant felt that in any community there would always be people more willing to provide support than others: "*I think there are people in any community that are more involved and people who are less involved, less interested"* (G6; 25-44 yrs), and some participants expressed the opinion that a disaster may actually bring back a sense of community: "*There is no humanity now, there is nothing. Everyone is running around, everyone, because of stress, an earthquake may make us better people, make us help each other"* (G8; 45+ yrs).

Participants also felt that local communities could identify the support and strategies they require in disaster situations, for example through the use of social media:

> "*There should be a community whose members support each other and notify in case they noticed that in the East or in another county or another city, you notify your neighbours, not necessarily your next door neighbors, I mean through Whatsapp, Facebook, communicate with them and notify them because they might be the next ones hit."* (G2; 18-24 yrs)

However, there was a sense of distrust amongst the participants towards the authorities and NGOs involved: "*I notify the authorities but you can't be sure that they will come*" (G8; 45+ yrs), which, in turn, was seen as reducing the authorities' ability to respond effectively in disaster situations: "*And they all expect help from the authorities, but the authorities cannot help if you don't trust them*" (G4; 54-44 yrs). Further distrust also appeared to undermine participants' willingness to help financially in disaster situations: "*In this way you end up not giving any money, thinking it might be taken*" (G6; 25-44 yrs).

4.5 'What can be done?' – Citizen suggestions

Across the discussion groups participants outlined a number of ideas of how to improve disaster preparedness, response and recovery. A primary suggestion across all groups was the need for improved education regarding disasters. In particular children were seen as requiring education about disasters from an early age as they lack awareness and experience of how to respond in a disaster situation:

> *"When I had my first earthquake I was in my apartment building, I think it was 2002-2003, but I felt it very intensely, I was on the 5th floor. I was young, I was under 10 years old and I panicked, me, who always said that I knew about that, because my parents told me about the '86 earthquake, what they had done and I was all fed up with their stories, but they were useful, I mean the moment I felt it I panicked, Maybe it was because I was a kid but I think that kids also need to be taught how to react"* (G4; 25-44 yrs)

This education of children was seen as being the responsibility of the parents: "*The parents have to tell them what to do in that event"* (G1; 18-23 yrs), and of the education system: "*I've seen that in kindergartens and institutions, they run simulations like that"* (G8; 45+ yrs), suggesting that encouragement and support should be given to both parents and educational institutes to help educate children regarding disasters.

Participants also expressed their own interest in disaster simulations as they felt that this would help prepare and educate not only their children but also adults like themselves for a disaster situation, whether at home or in the work place:

> *"To educate them so that they know that something like this can happen anytime, how to react, not to get scared, to keep their composure. We can also do play simulations with them. I hadn't thought of it, but I am thinking. You could conduct a sort of play simulation, simulate an earthquake in the house to see how they react, how they hide in the door frame, I don't know. And in school."*(G1; 18-24 yrs)
>
> "*There can also be simulations at the work place.*" (G6; 25-44 yrs)

Another suggestion related to education was to provide training courses so that citizens could learn basic first aid skills, how to respond in a disaster situation, and that these courses should ideally be tailored to an individual's own abilities:

> *"Again I think information, first aid courses, campaigns, leaflets handed out on the street or a public service announcement would help a lot so that in case of a fire they won't go in without any knowledge, without first learning what happened, if they go straight in not only will they not save anyone, but the person or persons will not come out again, like the ones who went in at Colectiv[17]."* (G2; 18-24 yrs)

Participants readily identified a large-scale training course carried out by NGOs at the National Arena in Bucharest[18] as a positive example of what could be done to help citizens prepare for a disaster. Furthermore, a minority of participants also felt that establishing a volunteer programme would be useful to provide support in future disaster situations.

Expanding upon the need for increased training and education for citizens, the participants also felt that there needed to be clear guidelines to follow in disaster contexts. A particular need was perceived for improving the emergency services' capabilities to provide appropriate training for staff and responders (e.g. in schools) involved in disaster contexts:

> *"For that, they should first of all train people who'd come to schools and teach this and it's difficult, they don't have the [resources]. There's a huge deficit in this field.[19]"* (G4; 25-44 yrs)
> *"When the Americans intervened when some forests caught fire, their intervention was very well established, they had a crisis cell with a main coordinator for all the actions […] There has to be clear coordination […]. In Romania they began something like this, but seeing as how in the Inspectorate for Emergency Situations they hired people off the street based on just their IDs without any training, it's really difficult to implement well designed working procedures."* (G5; 25-44 yrs)

Two further suggestions related to the need for assembly points and designated safety wardens : "*Everybody should have a meeting point established. So after it happens, let's say we are in this building, we all live there, the building management should have a place where all the inhabitants of the building meet, because the management knows exactly who lives there"* (G4; 25-44 yrs). "*There should be two, three people in a building that know how to proceed and the other people should also know, because those people are prepared"* (G9: 45+ yrs). Another suggestion that is linked to one of the previously identified vulnerable groups was that: *"the mayor […] should know all the social cases, he should know where to go first of all in case of a disaster"* (G3; 25-44 yrs).

Finally, participants felt that an early warning system would be useful to warn them of aim pending disaster situation: "*I would think that the state, the police, the mayor or someone should inform the population in advance"* (G2; 18-24 yrs), "*and maybe individual guides for those who can't hear. And there should be, I don't know, a colourful siren*" (G6; 25-44 yrs). In summary, participants felt that the authorities should seek to manage disaster situations, but with citizens providing support in contexts where they have knowledge of how to respond. Such knowledge should be strengthened allowing citizens to support more.

[17]The Colectiv nightclub fire was a disaster in Bucharest, Romania on 30 October 2015 with 64 fatalities and 147 casualties.
[18]A large-scale first aid and cardiopulmonary resuscitation (CPR) training course at the National Arena in Bucharest, Romania conducted by the Bucharest Rescue Service and the Bucharest Ambulance Service with 10,175 participants.
[19]In this case the participant was referring to the need to ensure that those individuals who are training children how to respond in disaster situations have themselves been adequately trained.

5. ”Top-of-mind” types of disasters and disaster causes

Research into disaster risk perception has demonstrated that there may be a relationship between perceived risk and type of disaster, in particular by distinguishing between “natural” and “man-made” causes. However, it has also been argued that due to environmental changes, population density, technological developments and political situations this distinction is becoming increasingly blurred[20] which, in turn, may effect both professionals’ and citizens’ perception of disaster risks. Accordingly, this topic was taken up in the first two CARISMAND Citizen summits and approached from various angles. In the beginning of the focus group discussions, all participants were asked to write down anonymously on a sheet of paper the first three disasters (outside their home country) they can think of spontaneously. The decision to ask for disasters outside the respective participants’ home country was not only aiming to make the data comparable between different Citizen Summits, but also to explore what types of disasters are top of their minds, rather than those that are “closest”.

Table 6

Disaster types – results of association exercise

	Non-weighted results (count)				Weighted results (count[21])			
Groups	**Total**	**18-24 yrs**	**25-44 yrs**	**45+ yrs**	**Total**	**18-24 yrs**	**25-44 yrs**	**45+ yrs**
Earthquake	**67**	12	28	27	**144**	23	60	61
Terrorist attack	**41**	7	22	12	**84**	18	42	24
Tsunami	**41**	15	11	15	**91**	38	19	34
Flooding	**50**	6	27	17	**91**	9	53	29

As a result of this association exercise, the type of disaster which was mentioned most often (non-weighted results) and also ranked highest (weighted results) were earthquakes; only participants aged 18-24 years mentioned tsunamis slightly more often and ranked them higher than earthquakes. Overall, flooding, terrorist attacks and tsunamis show similar results in both frequency and ranking.

Within the category of earthquakes, participants mentioned incidents across a variety of countries, with the 2011 earthquake in Japan mentioned most often (15 times). Among terrorist attacks, 9/11 was mentioned most often (17 times);within the tsunami category, most participants specifically pointed at the Indian Ocean 2004 disaster (11 times); for flooding, there was no focus on one specific event expect for India being mentioned more than any other location (8 times). Overall, the single disasters mentioned most often were Hurricane Katrina (22 times), followed by the 9/11 attack and the 2011 Japan earthquake. Other large-scale disasters such as the 2010 Haiti earthquake (3) or heatwaves (1) were barely mentioned, whereas Chile earthquakes[22](12), the 1986 Chernobyl disaster (12) and the June 2016 attack at Istanbul airport (10) were mentioned more often. These frequencies cannot merely be explained by different levels of media coverage but rather suggests a combination of scale, time line/frequency and perceived “proximity” of events.

[20] This finding was confirmed in the discussion groups held during the first CARISMAND Stakeholder Assembly held in Bucharest in April 2016.

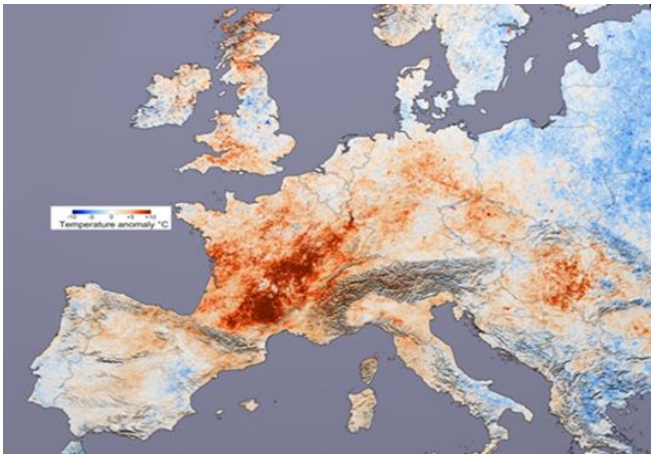
[21] The type of disaster associated first was given a weight of “3”, the one associated second a weight of “2”, and the one associated third a weight of “1”. If a participant associated four or more disasters, only the first three were transferred into the database.

[22]From the participants’ notes, it is not always clear whether they refer to the earthquake in 2015, in 2010, or the 1960 Valdivia earthquake which, with 9.5 on the Richter scale, is considered the strongest earthquake recorded since 1900.

Immediately after the association exercise, the participants discussed several questions related to risk perceptions in the context of different types of disasters[23] whilst being given visual cues (see pictures below). Again, to make the resulting data comparable, four disasters were chosen that all occurred outside the countries where the Citizen Summits took place[24]: (1) the earthquake in Ecuador on April 16th 2016; (2) the heavy flooding in Southwest Germany in May and June 2016; (3) the 2003 heatwave in Europe; and (4) the Fukushima disaster in 2011.

Ecuador earthquake 2016

Germany flooding 2016



European heatwave 2003

Fukushima disaster 2011

After discussing issues of disaster preparedness, response and recovery in relation to perceived risks for each of these four situations, the participants were asked to elaborate their thoughts about the causes for each respective disaster. The results below show that causes related to human activity were indicated almost twice as often as natural causes. Opinions that outlined a combination of natural and human activity related causes were expressed slightly less often than natural causes. The strongest emphasis on human activity related causes could be found for the 2003 heatwave; only for the Fukushima disaster natural causes exceeded slightly the number of human activity related causes.

[23] See in particular the qualitative results in chapter 4.2 Disaster Risk Perception.

[24] With the exception of the 2003 heatwave in Europe which affected Malta (the location of the second Citizen Summit) less than Romania. However, in the group discussions this phenomenon was presented as a Europe-wide rather than a country-specific disaster and with an emphasis on France, Germany and the UK as particularly affected locations.

Table 7

Causes of disasters mentioned during discussions

Causes	Nature		Human activity		Both	
	Count	*Percentage*	*Count*	*Percentage*	*Count*	*Percentage*
Earthquake Ecuador	**11**	**30%**	**20**	**54%**	**6**	**16%**
Flooding Germany	**15**	**27%**	**24**	**43%**	**17**	**30%**
Heatwave Europe	**13**	**24%**	**35**	**65%**	**6**	**11%**
Fukushima disaster	**15**	**39%**	**12**	**32%**	**11**	**29%**
Total[25]	**54**	**29%**	**91**	**49%**	**40**	**22%**

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Question: What do you think are the causes for this disaster?[26]

At the very end of the Citizen Summit, i.e. after presenting the results of the morning session, the participating citizens were again shown the same pictures and asked the same question. But this time, instead of discussing perceived causes of the four different disasters, they were given the opportunity to provide their anonymous response via their keypad.

Table 8

Causes of disasters measured using audience response keys

Causes	Nature		Human activity		Both	
	Count	*Percentage*	*Count*	*Percentage*	*Count*	*Percentage*
Q4.1.1 Earthquake Ecuador	**30**	**29%**	**6**	**6%**	**67**	**65%**
Q4.1.2 Flooding Germany	**40**	**39%**	**8**	**8%**	**55**	**53%**
Q4.1.3 Heatwave Europe	**27**	**26%**	**28**	**27%**	**48**	**47%**
Q4.1.4 Fukushima disaster	**27**	**26%**	**28**	**27%**	**49**	**47%**
Total	**124**	**30%**	**70**	**17%**	**219**	**53%**

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What do you think is the main cause for this disaster?

Q4.1.1: Showing picture of earthquake Ecuador; Q4.1.2: Showing picture of flooding Germany; Q4.1.3: Showing picture of heat map Europe; Q4.1.4: Showing picture of Fukushima power plant.

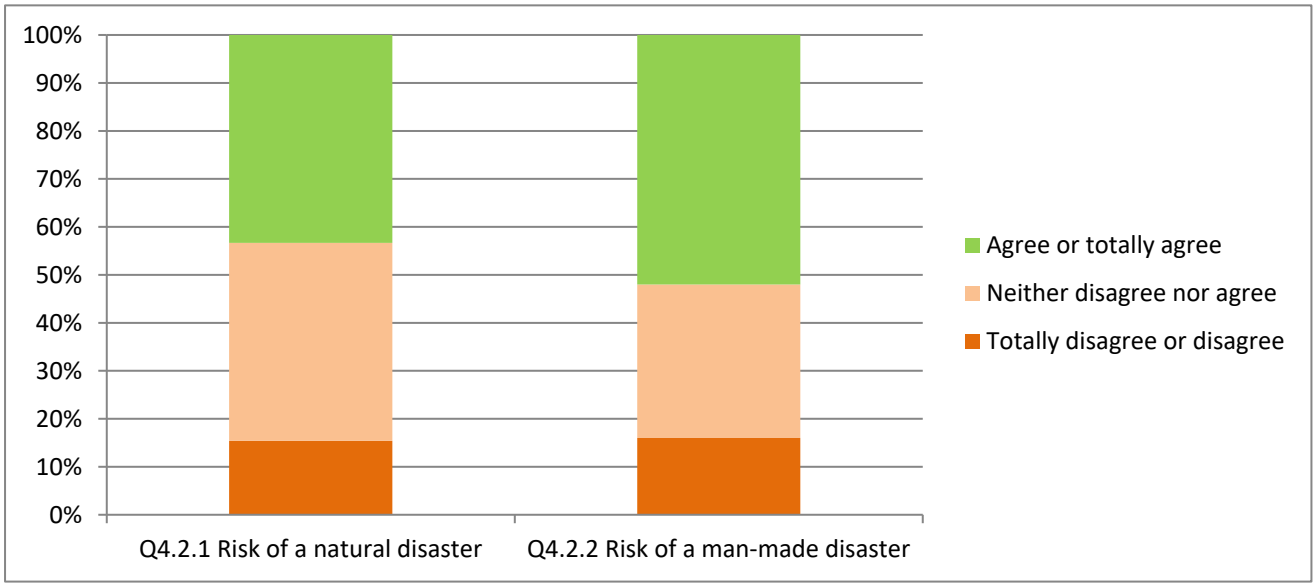
Around half (53%) of participants perceived both nature and human activity as main causes for the disasters. Just under one in three participants (30%) perceived nature alone as the main cause for the presented disasters. On the other hand, human activity was seen as the single main cause by less than one out of 5 participants.

[25]Regarding the comparison of total counts in this table, it needs to be taken into consideration that there were only 2 discussion groups with participants aged 18-24 years, but 4 discussion groups with participants aged 25-44 years and 3 groups with participants aged 45 years and older (one of the 45+ groups did not discuss this specific set of questions due to time constraints in the end of the session).

[26]All responses of each participant were counted; accordingly, it was possible for one participant to indicate several causes per event. However, if a participant repeated the same argument (cause) for one event several times, it was counted only once. The "quantification" of qualitative data in this table is not for statistical purposes but only serves the purpose of facilitating a comparison with Table 8.

At the same time, the quantitative data revealed only a weak relationship between the perceived disaster causes (see Table 8 above) and the perceived risk of a natural disaster in the participants' area in the next three years (see Figure 6 below, left column), and no relationships between perceived disaster causes and the perceived risk of man-made disasters in the next three years (see Figure 6 below, right column). These results suggest that there are factors other than knowledge and experience which shape these citizens' risk perception of disasters, in particular for those with perceived non-natural causes.

Figure 6
Perceived risk of natural or man-made disasters in the next 3 years



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How much do agree, or disagree, with the following statement (5-point Likert scale with 1=totally disagree, 5=totally agree):
Q4.2.1: I think there is a high risk of a natural disaster happening in my area in the next 3 years.
Q4.2.2: I think there is a high risk of a man-made disaster happening in my area in the next 3 years.

6. Summary & Conclusions

The quantitative data revealed that a majority of the participants of the Romanian Citizen Summit felt a strong lack of awareness about disaster guidelines and procedures, and did not feel informed or adequately prepared for what to do in a disaster situation. These findings reflect those of the discussion groups, where participants felt that there was a lack of awareness and education in how to respond in a disaster situation. Initially, disaster preparedness was felt by a number of participants to be predominantly the responsibility of the authorities, particularly in ensuring that infrastructure is developed to withstand those disasters perceived to be more prevalent in Romania, i.e. earthquakes and floods. However, further discussions amongst the participants highlighted that some participants did seek to actively prepare themselves in case of a disaster through attending first aid or disaster awareness courses, and a number of participants had prepared disaster 'emergency kits'.

In examining the participants' disaster risk perception, the qualitative data highlighted that the perceived impact of the disaster was linked to risk perception whereby greater impact was associated with greater perceived risk; alternatively events which were seen as having little impact were not seen as posing a risk. Here, participants referred to prior experience as shaping how they perceived risk in disaster situations. Frequency was also identified in influencing how risk was perceived, as if disasters were perceived as infrequent then awareness of risk may decrease. These associations, however, were not confirmed by the quantitative data, where no significant correlation could be found between worry and concern about disasters in their area at the moment and the risk that a natural or man-made disaster would occur in the next three years, nor when comparing these results with the results of the association exercise.

In relation to intended behaviour in disaster situations, the quantitative data show that the participants' immediate reaction would be to contact the emergency services rather than contacting family and friends, whereas calling their family and friends was indicated as the second behavioural response in a disaster situation. Although nearly all the participants used social media, in a disaster situation they perceived it as more likely that they use social media in relation to an on-going situation, in particular for staying in contact with others, rather than as an immediate response. The qualitative data confirmed that participants were likely to check the safety of their family and friends and to call the emergency services, although prior to these actions they would seek to ensure their own safety. The qualitative data further suggest that participants would seek to aid authorities in disaster relief and recovery where they perceived that they had the abilities to do so.

As particularly vulnerable groups, beyond age, social, economic and/or physical characteristics, the participants identified:

- Orphans who were seen as generally lacking support;
- Elderly individuals who
    - live alone and lack support,
    - do not wish to evacuate and leave their homes behind,
    - overestimate their physical abilities, e.g. during heatwaves;
- Individuals who neglect safety measures or create their own vulnerability through specific behaviours such as
    - e.g. illegal building adjustments,
    - ignoring maintenance of safety features in their homes;
- Professional groups who may place themselves at risk due to working conditions, e.g. when working during heatwaves.

Participants felt that having a sense of community would be a major strength in responding to a disaster and that there would always be some individuals who would provide support to others. Indeed there was a suggestion that community strength might actually improve following a disaster, and that communities can help to identify the support and strategies they require.

One element identified during the discussion groups was distrust amongst some of the participants towards authorities which may hinder authorities' ability to respond effectively to the disaster, and undermine individuals' willingness to help.

For each of these vulnerable groups listed above it may be recommended to define measures that (1) help to identify individuals and/or groups who are vulnerable to disasters and those who may be more willing to volunteer in disaster situations, and (2) provide information and opportunity to enhance resilience and reduce vulnerabilities to disasters. To this end, the participants outlined a number of suggestions on how to improve preparedness and ability to respond in disaster situations. In particular, participants referred to the need for education and awareness of disasters with the use of simulations and provision of information campaigns and training courses, not only from an early age but also for adults who show an interest in this. Participants also felt there was a need to ensure that those responding to disaster situations were appropriately trained, which may also work to reduce distrust. A final suggestion relates to potential for an early warning system to enable a chance to prepare or evacuate in response to a disaster.

To summarise, the results of this CARISMAND Citizen Summit point at two separate approaches: Identifying and addressing the strengths and weaknesses of specific groups as outlined above, and developing a system to harness citizens able and willing to assist in disaster situations. The individual topics raised in this report will be compared and synthesised with the results from the second Citizen Summit which was held in Malta. These synthesised results will shape the next round of Stakeholder Assembly and Citizen Summits in 2017.

Appendix A

Time	Detailed Schedule & Content	Total running
[30 min.]	0. Participant registration & collecting consent forms	
15 min.	**1. Welcome; introduction / presentation CARISMAND project**	15 min.
15 min.	**2. Presentation: Organisation & logistics** 2.1 Time schedule; breaks; refreshments 2.2 Breakout rooms/locations; emergency procedures 2.3 Incentives 2.4 Distribution of voting keypads and technical instructions *[including test question]*	30 min.
20 min.[27]	**3. Question Set I:** *The first 6 questions in this set (Q3.1 – Q3.6) are taken directly from the recruitment questionnaire and provide some demographic and other basic participant information.* *Q3.7 is the first in a series of questions which ask for citizens' risk perception. This type of question is going to be posed to the audience several times, each time after providing additional information (e.g. via presentations, or after giving visual cues).[28] Furthermore, it is embedded between or preceding so-called transitional questions (here Q3.8) which lead towards the next presentation or exercise.* *Q3.9, Q3.10 and Q3.11 measure citizens' disaster preparedness intentions.[29]* 3.1 Gender *(1=female, 2=male, 3=choose not to say)* 3.2 Age *(numeric)* 3.3 Do you, or a close friend or family member, have ever experienced a disaster? *(1=yes, 2= no, 0=I'm not sure)* 3.4 Do you feel you are living in an area that is specifically prone to disasters? *(1=yes, 2=no, 0=I'm not sure)* 3.5 Do you know of any other people in your area where you live who you think are particularly vulnerable or exposed to disasters? *(1=yes, 2=no, 0=I'm not sure)* 3.6 Do you work as a volunteer in a community or self-help group*?* *(1=yes, 2=no)* 3.7 How much do you agree, or disagree, with the following statement: "I am worried about disasters in the area where I live."	

[27] The time for this (as well as for each following) set of questions is generously planned, allowing for app. 2 min. per question. It is envisaged that the presenter reads each question and all answer options out loud to the audience whilst they are shown on the presentation screen.

[28] In order to achieve adequate internal consistency but without using exactly the same wording several times, these questions are based on the 5-item measure developed by Kellens et al (2011) with a Cronbach's Alpha of 0.80 for the perception of flood risk, adapted to disasters in general (see Kellens, W., Zaalberg, R., Neutens, T., Vanneuville, W., & De Maeyer, P. (2011). An analysis of the public perception of flood risk on the Belgian coast. Risk analysis, 31 (7), 1055-1068).

[29] Questions are based on the 3-item measure (Cronbach's Alpha 0.86) developed by Terpstra (2011) for flood preparedness intentions. (see Terpstra, T. (2011). Emotions, trust, and perceived risk: Affective and cognitive routes to flood preparedness behavior. Risk Analysis, 31 (10), 1658-1675)

	(1=I totally disagree, 2=I disagree, 3=I neither disagree nor agree, 4=I agree, 5=I totally agree, 0=I'm not sure) 3.8 How much do you know about the guidelines and procedures your local disaster management authorities are following in case of a disaster? *(1=nothing at all, 2= not a lot, 3=something, 4=quite a lot, 5=a lot, 0=I'm not sure)* 3.9 To what extent are you interested in information about disaster preparedness? *(1=not interested at all, 2=interested very little, 3=interested a little, 4=quite interested, 5=very interested, 0=I'm not sure)* 3.10 How well do you personally feel prepared for a disaster in your area? *(1=not prepared at all, 2=not prepared, 3=neither prepared nor unprepared, 4=prepared, 5=well prepared, 0=I'm not sure)* 3.11 To what extent do you intend to prepare against disasters? *(1=Prepare not at all, 2=Prepare very little, 3=Prepare a bit, 4=Prepare quite a lot, 5=Prepare a lot, 0=I'm not sure)*	**50 min.**
15 min.	**4. Factual presentation about a local disaster simulation exercise (including short video if available)** *presented by moderator*	**1h 5min.**
10 min.	**5. Question Set II:** *Q5.1, Relates directly to the preceding presentation, asks citizens for their evaluation of simulation exercises. This question is directly based on the findings in the first Stakeholder Assembly where disaster practitioners described simulation exercises as improving cooperation, communication and trust.* *Q5.2 measures risk perception after being provided with "real life" information about actual disaster management practices.* *Q5.3 is a transition question introducing the next presentation topic (communication between authorities and citizens).* *Q5.4 and Q5.5 are transition questions as well, bringing in the additional aspect of media usage.* 5.1 What do you think about disaster simulation exercises like this? *(1=they are not important at all, 2=they are not important, 3=they are neither important nor unimportant, 4=they are important, 5=they are very important, 0=I'm not sure)* 5.2 How much do you agree, or disagree, with the following statement: "When I think of disasters in my area, I feel concerned." *(1=I totally disagree, 2=I disagree, 3=I neither disagree nor agree, 4=I agree, 5=I totally agree, 0=I'm not sure)* 5.3 How informed do you feel by the authorities of what you have to do in case of a disaster? *(1=not informed at all, 2=not informed, 3=reasonably informed, 4=informed, 5=very informed, 0=I'm not sure)* 5.4 Imagine that a situation in which there is a high risk of a disaster happening soon, and you feel this disaster may cause serious harm to your family or friends. What is the first thing you would do? *(1=Call the emergency services, 2=call family / friends, 3=Go to my neighbours, 4=Use social media to inform family / friends, 5=submit information via social media to local authorities/emergency services, 6=Get more information via the Internet, 7=Get more information from social*	

	networks, 8=Turn on the TV, 9=Turn on the radio, 10= Other, 11=I'm not sure) 5.5 What is the <u>next</u> thing you would do? *(1=Call the emergency services, 2=call family / friends, 3=Go to my neighbours, 4=Use social media to inform family / friends, 5=submit information via social media to local authorities/emergency services, 6=Get more information via the Internet, 7=Get more information from social networks, 8=Turn on the TV, 9=Turn on the radio, 10= Other, 11=I'm not sure)*	**1h 15min.**
15 min.	**6. Presentation about the communication procedures between authorities and citizens in case of a disaster**	**1h 30min.**
15 min.	**7. Question Set III:** *This set of questions builds upon the results from the 1st Stakeholder Assembly where practitioners expressed their perceived usefulness of social media, but only in the recovery phase. There, social media were ascribed an important role in re-establishing feelings of security through social cohesion and solidarity. However, for preparation, prevention and management of disasters, most practitioners appeared to prefer the use of traditional media which they believed to have a stronger impact and be more "trustworthy for the population".* *Q7.3 (and further elaboration of this topic in the focus group discussions in the afternoon) explores the potential of social media as a sustainable element in <u>all</u> disaster phases (for preparedness, see also Q5.4 and Q5.5).* 7.1 Do you use social media? *(1=yes, 2=no, 0=I'm not sure)* 7.2 Do you use a mobile phone? *(1=yes, 2=no)* 7.3 In the case of an ongoing disaster, how likely are you to use social media to: 7.3.1 inform yourself about the disaster 7.3.2 submit information about disaster risks or disasters to local authorities/emergency services 7.3.3 warn/inform other social media users 7.3.4 warn/inform family and friends 7.3.5 stay in contact with others during a disasters 7.3.6 provide help to others during a disaster 7.3.7 provide help to others? *(1=very unlikely, 2=unlikely, 3=neither unlikely nor likely, 4=likely, 5=very likely, 0=I'm not sure)*	**1h 45min.**
15 min.	**8. Presentation about the use of social media in disaster management** *provided by moderator*	**2h**
15 min.	**Coffee break**	**2h 15min.**
15 min.	**9. Introduction of moderators and discussion group logistics** (and guiding participants to the different breakout rooms)	**2h 30min.**
10 min.	**10. Discussion group briefing** *Welcome the participants and assign them a seat. This is mandatory, in order to obtain their informed consent and to ensure that they understand what they have agreed to do. Explain to them that the audio recording of the discussion is necessary so as not to miss any of the comments given*	

	during the discussions. Start recording the meeting and inform the participants that the recording has begun. "Welcome and thank you for agreeing to participate in this discussion group. Your contribution is highly valued. My name is _____ and I will be chairing this group discussion. Our session will take about 90 minutes. Since we will be audio recording the discussion, I would kindly ask you to speak in a clear voice and one at a time; your opinions, experiences and suggestions are very important to this project, and we do not want to miss any of your comments." *At this stage, do not to provide any additional details on the content of the discussion group in order to avoid influencing and biasing the discussion! However, in case a participant asks, you can give them the general explanation that* "these discussions serve to understand how citizens feel and what they think about disasters". "As stated on the signed consent form, everything that will be recorded during this session will be used only for the purposes of this study and will be kept confidential, i.e. the recorded comments might be used in scientific publications and reports relating to this study, but only as anonymous quotes. I want you to make sure that you are comfortable enough to share your opinions with all the participants in the group. In order to facilitate this, I would like to ask everyone present to follow these ground rules: • We are interested in the opinion of each individual and we would therefore like to hear from all the people in the group. • There are no wrong or right answers. There are only different opinions. Consequently, we'd like you to respect each other's opinions. • It is important for us that only one person speaks at a time. Each opinion is important and I would kindly request that you don't speak when others are speaking, otherwise it will be difficult for us to capture all of your opinions. • I would also kindly request that you silence your mobile phones and thus provide for an uninterrupted discussion. Do you have any comments or other suggestions for these ground rules? Do you have any other important general questions before we start?" […] "So, let us start with each member of the group briefly introducing themselves. Let us go around the table. Tell us, please, your name or, if you prefer, your first name or a nickname, and a few basic things about yourself, for example your age, your occupation etc. Let me start by introducing myself…"	**2h 40min.**
40 min.	**11. Group discussion topic 1: Perceptions and effects of natural and man-made disasters[30]**	

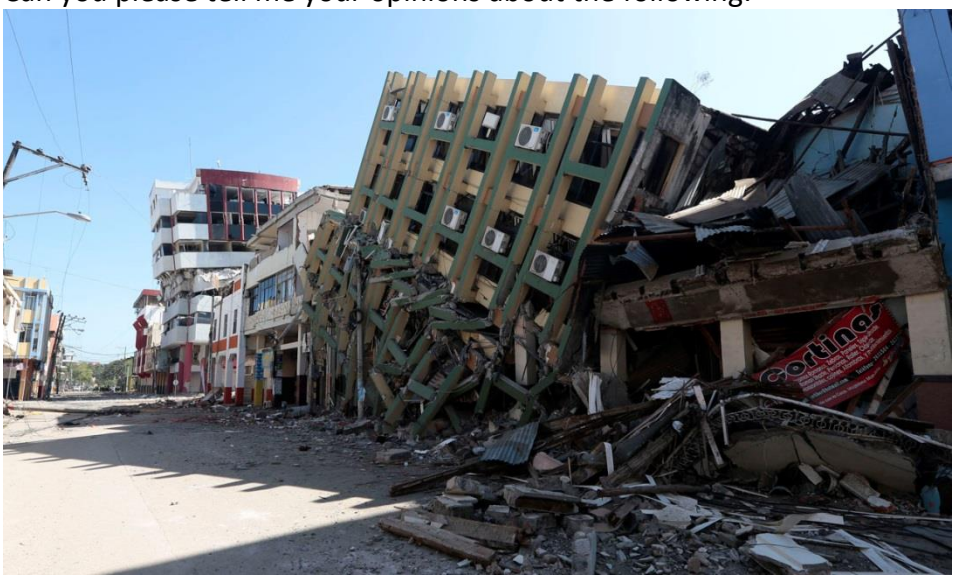
[30] It is widely by expert recognised today that disasters related to natural hazards, such as landslides, floods, earthquakes etc., are mainly man-made and only in small part linked to a natural event (e.g. the earthquake in L'Aquila, in 2009 destroyed the town with more than 300 deaths; the one in Ecuador, mentioned below, killed more than 660 people; but other earthquakes in Japan, of greater magnitude, were almost without consequences; the "difference" was in the quality of buildings, in the preparedness of people, etc. i.e. in man-made factors).

This topic was brought up in the 1st Stakeholder Assembly: the blurring distinction between natural and man-made disasters.[31] However, instead of presenting this distinction (which is still widely used in the literature) and ask participants to "choose", the intention of this set of questions is to explore whether citizens, actually, do think in the same categories as practitioners.

11.1 As a start, could you please write down on a sheet of paper three disasters you can spontaneously think of and that happened outside your country?

All participants should have a blank sheet of paper and a pen available to write these 3 disasters down. They can use the name of the location, but if they are not sure about the precise location they may also use terms such as "large fire in Australia", "earthquake in South America", "building collapse in Russia", "heatwave 2003 in Europe" etc. Please collect these sheets of papers and hand them in to the event organisers afterwards.

11.2 This picture shows some of the destruction after the earthquake in Ecuador on April 16th this year (2016), with a magnitude of 7.8, killing more than 660 people and leaving almost 28,000 injured.
Can you please tell me your opinions about the following:



11.2.1 Once people realise that something like this is happening, or going to happen, how much time do you think they would have to take action to keep themselves and their families safe? And what possibilities would they have had to be prepared?

Possibilities to prepare for a disaster could be, for example, listening to warnings issues by the authorities or informing oneself about emergency procedures, but also long-term strategies such as avoiding to work/live in or travel to certain areas that are prone to disasters.

If you were living in this area, how worried would you be about disasters like this?

[31] For the increasing complexity of disasters with multiple components see also e.g. Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The risk perception paradox—Implications for governance and communication of natural hazards. Risk analysis, 33 (6), 1049-1065.

This question is aiming to explore whether the fast or slow onset of a disaster plays a role in the way people perceive disaster risks.

11.2.2 How long do you think it will take the people who live there to get back to a "normal" way of life after this disaster? How will it affect their lives? What, if anything, is going to change?

This question is aiming to explore how people feel about the short or long-term effects of a disaster, and how the experience of such disaster may, or may not, change their risk perception and/or behaviour. It should also explore potential positive effects (such as learning process, community resilience increase, people empowering, widening of volunteer actions, etc.).

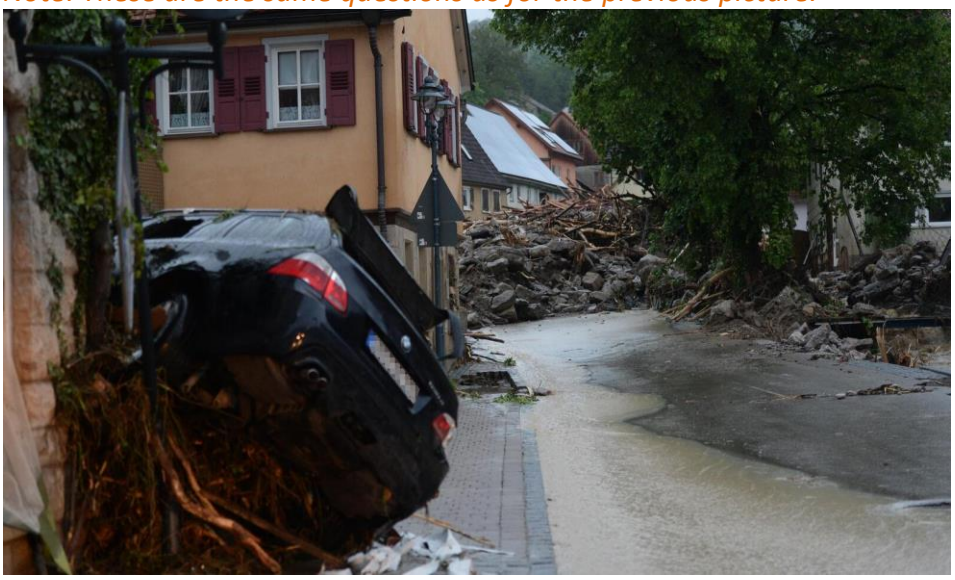
11.2.3 What do you think are the causes for this disaster?

This question is aiming to explore whether people, actually, think in distinct categories such as natural and man-made disasters, and to what extent such categorisation affects their risk perception.

11.3 This picture is a bit "closer" to our European homes: It shows the very recent aftermath of heavy rainfall and flooding in Southwest Germany in the night from May 29th to May 30th 2016, where 4 people died, amongst them a 13-year-old girl and a volunteer firefighter whilst trying to rescue a man trapped in a flooded railway station.

Can you please tell me your opinion about the following:

Note: These are the same questions as for the previous picture.



11.3.1 Once people realise that something like this is happening, or going to happen, how much time do you think they would have to take action to keep themselves and their families safe? And what possibilities would they have had to be prepared?

Possibilities to prepare for a disaster could be, for example, listening to warnings issues by the authorities or informing oneself about emergency procedures, but also long-term strategies such as avoiding to work/live in or travel to certain areas that are prone to disasters.

If you were living in this area, how worried would you be about disasters like this?

This question is aiming to explore whether the fast or slow onset of a disaster plays a role in the way people perceive disaster risks.

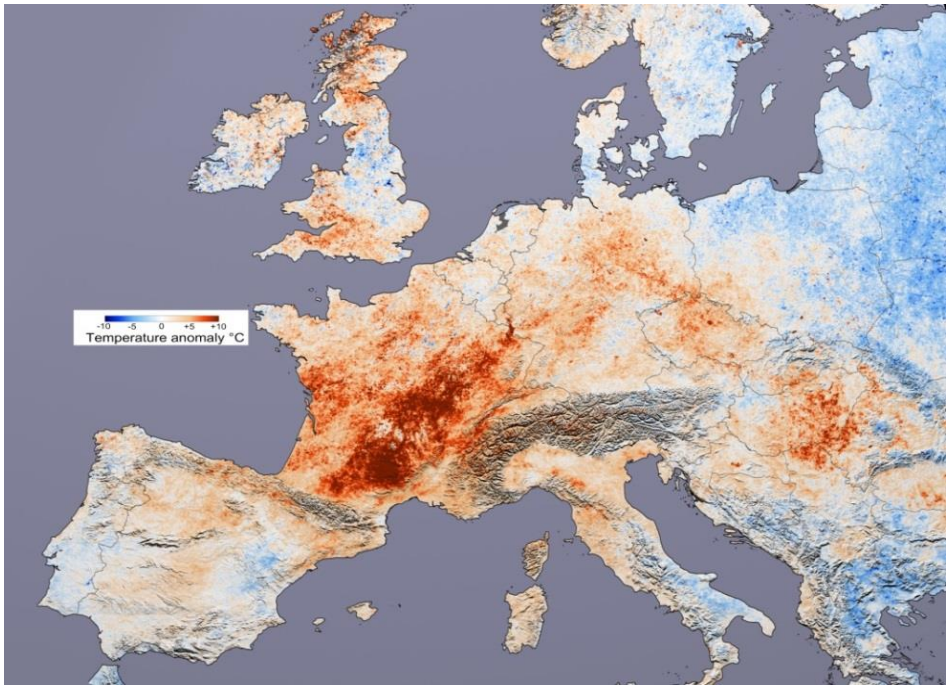
11.3.2 How long do you think it will take the people who live there to get back to a "normal" way of life after this disaster? How will it affect their lives? What, if anything, is going to change?

This question is aiming to explore how people feel about the short or long-term effects of a disaster, and how the experience of such disaster may, or may not, change their risk perception and/or behaviour. It should also explore potential positive effects (such as learning process, community resilience increase, people empowering, widening of volunteer actions, etc.).

11.3.3 What do you think are the causes for this disaster?

This question is aiming to explore whether people, actually, think in distinct categories such as natural and man-made disasters, and to what extent such categorisation affects their risk perception.

11.4 This picture goes a little bit further back in time, showing a map of the heatwave in Europe in 2003, with temperatures up to 10 degrees higher than average for the period between July 20th and August 20th. Overall this heatwave cost more than 70,000 lives, with France being hit hardest and almost 15,000 deaths.



Can you please tell me your opinions about the following questions:

11.4.1 Once people realise that something like this is happening, or going to happen, how much time do you think they would have to take action to keep themselves and their families safe? And what possibilities would they have had to be prepared?

Possibilities to prepare for a disaster could be, for example, listening to warnings issues by the authorities or informing oneself about emergency procedures, but also long-term strategies such as avoiding to work/live in or travel to certain areas that are prone to disasters.

If you were living in this area, how worried would you be about disasters like this?

This question is aiming to explore whether the fast or slow onset of a disaster plays a role in the way people perceive disaster risks.

Additionally, it should be explored to what extent the "visibility" or "invisibility" of a disaster shapes people's risk perceptions.

11.4.2 How long do you think it will take the people who live there to get back to a "normal" way of life after this disaster? How will it affect their lives? What, if anything, is going to change?

This question is aiming to explore how people feel about the short or long-term effects of a disaster, and how the experience of such disaster may, or may not, change their risk perception and/or behaviour. It should also explore potential positive effects (such as learning process, community resilience increase, people empowering, widening of volunteer actions, etc.).

11.4.3 What do you think are the causes for this disaster?

This question is aiming to explore whether people, actually, think in distinct categories such as natural and man-made disasters, and to what extent such categorisation affects their risk perception.

11.5 And now one final picture: It shows the aftermath of the disaster at the Fukushima Nuclear Power Plant in March 2011. Following an earthquake, a tsunami caused equipment failures which, in turn, caused a loss-of-coolant accident, resulting in nuclear meltdowns and the release of radioactive material.

Can you please tell me what you think in this case:

Note: These are the same questions as for the pictures in 11.2 and 11.3.

11.5.1 Once people realise that something like this is happening, or going to happen, how much time do you think they would have to take action to keep themselves and their families safe? And what possibilities would they have had to be prepared?

Possibilities to prepare for a disaster could be, for example, listening to warnings issues by the authorities or informing oneself about emergency procedures, but also long-term strategies such as avoiding to work/live in or travel to certain areas that are prone to disasters.

If you were living in this area, how worried would you be about disasters like this?

	This question is aiming to explore whether the fast or slow onset of a disaster plays a role in the way people perceive disaster risks. 11.5.2 How long do you think it will take the people who live there to get back to a "normal" way of life after this disaster? How will it affect their lives? What, if anything, is going to change? *This question is aiming to explore how people feel about the short or long-term effects of a disaster, and how the experience of such disaster may, or may not, change their risk perception and/or behaviour.* 11.5.3 What do you think are the causes for this disaster? *This question is aiming to explore whether people, actually, think in distinct categories such as natural and man-made disasters, and to what extent such categorisation affects their risk perception.*	**3h 20min.**
60 min.	**Lunch break**	**4h 20min.**
20 min.	**12. Group discussion topic 2: The role of citizens in different disaster phases** 12.1 Welcome back! Let us now move to a couple of questions that affect you personally: If you think there is a risk that a disaster may happen in your area, what do you think you can do to prepare - Yourself and your family, - for people who live in your neighbourhood? 12.2 If a disaster does happen in your area, what do you think you can do? 12.3 After a disaster has happened and, slowly, things are getting back to normal, what do you think you can do during this period? *The intention of this set of questions is to explore how citizens see their own role and their own possibilities to become active before, during and after disasters. If they have difficulties to imagine any situations, they may be given as examples different types of disasters, e.g. "Imagine there is serious flooding/an earthquake/a gas explosion in your area". However, it should first be explored with which examples participants may come up by themselves, which will give some indication about what types of disasters are, actually, on top of their mind.*	**4h 40min.**
25 min.	**13. Group discussion topic 3: The role of cultural groups and cultural factors in disaster preparedness, relief and recovery** 13.1 Who do you think are the people, or groups of people, who are most affected by disasters? Why do you think they are more affected than others? *Whilst this question is aiming to explore the influence of cultural aspects, it is important NOT to use the word "culture" immediately, as this may trigger stereotyping (e.g. age, gender) or reducing the definition of culture to ethnicity or religious groups.* ***PLEASE STEER THE DISCUSSION AWAY FROM THE OBVIOUS "CHILDREN, OLD PEOPLE, DISABLED" GROUPS that are likely to be mentioned. In such case – for example if age is given as a stereotypical "cultural***	

	factor" – you could ask: "Do you mean <u>all</u> elderly people? Or what differences are there?" *To probe further, also some of the following examples could be given:* *- Different livelihoods* *- Different educational backgrounds* *- Different levels of local knowledge (and local risks), for example due to migration* *- Different levels of health literacy (e.g. behaviour during heatwaves)* *- Gender roles (for example women having less access to education)* *- Age-related aspects (for example elderly people living alone under precarious conditions).* 13.2 What do you think are the specific needs of these people, or groups, - in preparing for a possible disaster - during a disaster - after a disaster getting back to "normal" life? 13.3 And who do you think are the people, or groups of people, who can give most help before, during and after disasters? Why? 13.4 If you think of the area where you live, what do you believe are the strengths of your community in case a disaster strikes? And what do you believe are the weaknesses? 13.5 When you think of the strengths of your community you just described, how do you think these strengths could be made use of in cooperation with the authorities (local authorities, emergency services, etc.) - during the preparation for a disaster - during a disaster - when recovering from a disaster? "With this last topic our group discussion has come to an end. Thank you very much for participating and for sharing your opinions and thoughts. We will now have a coffee break and then return to the main room, where there will be a final presentation which is summarising the results from today."	**5h 5min.**
15 min.	**Coffee break** (and guiding participants back to the main meeting room)	**5h 20min.**
10 min.	**14. Question set IV:** "Welcome back from what we think were some very interesting discussions. To summarise the opinions you expressed – particularly regarding the different types of disasters you identified – I would like to quickly show you again these pictures and ask: *Show the same pictures as in Group discussion topic 1, and ask question 14.1 separately for each picture / assembly of pictures:* 14.1 What do you think is the main cause for this disaster? *(1=Nature, 2=Human activity, 3=both, 4=I'm not sure)* 14.2 How much do you agree, or disagree, with the following statements: 14.2.1 "I think that there is a high risk of a natural disaster happening in my area in the next 3 years." *(1=I completely disagree, 2=I disagree, 3=I neither disagree nor agree, 4=I agree, 5=I completely agree, 0=I'm not sure)* 14.2.2 "I think that there is a high risk of a man-made disaster happening in my area in the next 3 years." *(1=I completely*	**5h 30min.**

	disagree, 2=I disagree, 3=I neither disagree nor agree, 4=I agree, 5=I completely agree, 0=I'm not sure)	
20 min.	**15. Final presentation: Overview of real-time results from participants' responses via the audience response system** *During the breaks and the group discussions, the participants' responses will undergo a quick analysis and be collated in a presentation which visualises the results via graphs and in short descriptive statements.*	**5h 50min.**
10 min.	**16. Conclusion**	**6h**

Appendix B

CARISMAND Citizens Summits

Recruitment questionnaire

Participant name: _____

1. Gender: ❍ Female ❍ Male

2. Age: _____ years

3. Have you, or a close friend or family member, ever experienced a disaster?

   ❍ Yes ❍ No ❍ I'm not sure.

4. Do you feel you are living in an area that is specifically prone to disasters?

   ❍ Yes ❍ No ❍ I'm not sure.

5. Do you know of any other people in your area where you live who you think are particularly vulnerable or exposed to disasters?

   ❍ Yes ❍ No ❍ I'm not sure.

6. Do you work as a volunteer in a community or self-help group?

   ❍ Yes ❍ No ❍ I'm not sure.

7. Do you use social media?

   ❍ Yes ❍ No ❍ I'm not sure.

8. I am working in a profession that is related to disaster management (e.g. Emergency Services).

   8.1. ❍ Yes ❍ No ❍ I'm not sure.

Participant signature: _____ Date: _____