

CIVIL RESPONSE AFTER DISASTERS

THE USE OF CIVIL ENGAGEMENT IN DISASTER ABATEMENT

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Keywords

Civil engagement, volunteers, civil emergency response, myths, government.

Abstract

The Netherlands Institute for Safety (NIFV) conducted an international literature review to investigate the behavior of citizens participating in response to disasters. The results of the literature review are compared to studies of four Dutch disasters: airplane crash in 1993 (cargo plane crashed into an apartment building in Amsterdam), the flooding of several rivers in the province of Gelderland in 1995, the fireworks disaster in Enschede in 2000 and the pub fire in Volendam in 2001.

In the literature review it is shown that (internationally) citizens massively respond to disasters, participating in rescue activities. This is confirmed for the Dutch situation in the four Dutch disaster studies. It is also shown that (internationally and in the Dutch situation) professional emergency responders do not know how to deal with this large number of volunteers who show up and want to help at the disaster scene. Myths of panic, looting and apathy appear to dominate the attitude of professional disaster responders towards civilians. Disaster preparedness plans do not take into account the use of civilians and are more focussed on measures to keep them away from the disaster scene. Training and education programs in the Netherlands are still based on the previously mentioned myths. Recommendations are made to improve these matters.

Introduction

For the last decades the responsibility for safety in the Netherlands has increasingly become a governmental one. Emergency response has become more and more the concern of professionals and the use of volunteers in emergency response seems to be decreasing. In the Netherlands it has become difficult to recruit civilians who want to join the volunteer fire brigade (Haverkamp, 2006). On the other hand there are initiatives of people wanting to participate in creating a safe neighborhood (Nieborg and Ter Woerds, 2004). Lately there has been some discussion about this responsibility for safety in the Netherlands. Citizens should be aware of the fact that the government cannot guarantee permanent and complete safety and that they have their own responsibility for their safety. Therefore there is an increasing appeal from the government to civilians to take their own responsibility. At the moment there is a campaign in the Netherlands, called 'Think ahead', which encourages people to prepare themselves to different kinds of disaster. Also there are some initiatives in the city of Amsterdam to stimulate civilians to participate in response to disasters, such as a communication campaign and the use of cell broadcasting to inform people what to do and how they can help in case of disaster (Van der Most, 2007).

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The question is whether engagement of citizens in disaster response is advisable. If so, is it necessary to encourage citizens to participate in disaster response? What is the attitude of professionals and government towards civil engagement in disaster response? And if engagement is advisable and citizens need to be encouraged to participate in disaster response, how can this be achieved? In what way can the government stimulate engagement of civilians in disaster response?

These questions have been leading for a review of the literature, conducted by the Netherlands Institute for Safety *Nibra* (NIFV) in 2006. After this literature review, the NIFV conducted four case studies, in order to compare facts from the international literature to the Dutch situation. The question was whether findings from international literature also apply to the Netherlands.

Aim of the investigation and sources of information

The aim of the literature review was to investigate whether engagement of citizens in disaster response is desirable, and, if so, whether stimulation of this engagement is necessary. In order to gain an insight into the *advisability* of involving citizens in disaster abatement, the literature search focused on the pros and cons of engagement of citizens in response to disasters.

In order to gain an understanding of the possibilities to *stimulate* citizens to participate in response to disasters, the literature search focused on distinctive characteristics and conditions which determine whether and to what extent people will participate in the response to disasters. Also information was searched about the way the government can influence characteristics and conditions which determine the participative behavior of citizens.

Finally we searched for information about the *attitude* of government and emergency services towards participation of civilians in response to disasters. This attitude can play an important role in deciding if and how participation of citizens should be stimulated.

The aim of the case studies was to establish whether the findings in the international literature also apply to citizen response to disasters in the Netherlands. For the case studies evaluation reports of the cargo plane crash in Amsterdam in 1993, the flooding of several rivers in the province of Gelderland in 1995, the fireworks disaster in Enschede in 2000 and the pub fire in Volendam in 2001 were used.

Findings of the literature review

Is engagement of citizens in response to disasters advisable?

Previous research from different scholars (Barton (1969), Ye and Okada (1976), Quarantelli (1989), Tierney and Goltz (1995), Auf der Heide (2004) and Petal et al. (2004) shows, that in case of disaster, the majority of victims saves itself or is rescued by other civilians. Less than a quarter of the victims are rescued by professional emergency services. Emergency services simply have not got the capacity to rescue all the persons involved. This leads to the conclusion that engagement of civilians is not only desirable, but also necessary to save lives in case of disaster. The fact that citizens are instantly present at the disaster scene and can immediately start their rescuing activities is the most mentioned advantage of civil engagement in response to disasters. In addition to this, the following advantages are also mentioned:

- Citizens generally have a better knowledge of the stricken area and know the daily routines of their family, friends and neighbors. This implicates that they can help in localizing possible victims (Aguirre et al. 1993, Barton 1969);
- Engagement of citizens helps the community in the psychological recovery after disasters (Lowe and Fothergill 2003).

Besides advantages, the following disadvantages can be found in the literature:

- Individual participation by civilians is difficult to coordinate which makes it difficult to make adequate use of their capacities and skills (Drabek and McEntire 2003);
- The mass assault of volunteers wanting to help and the convergence of people and materials can cause logistic problems. (Barton 1969, Dynes 1994, Perry and Lindell 2003);
- Volunteer rescuers trying to help can become a casualty themselves (Petal et al. 2004).

Taking all the advantages and disadvantages into consideration, it is not easy to draw an unambiguous conclusion. One could argue that the disadvantages prove to be minor as compared to the major advantage of immediate and mass civil response to disasters. However there is very little quantitative information about the disadvantages of civil participation: how many people died or became injured as a consequence of civil participation? For instance because of the logistic problems they caused, due to which professional help arrived too late. Or because they got injured themselves. Or because they helped someone inadequately, enlarging his or her problem rather than helping this person. Since in the literature there are no answers found to these questions, only indicative conclusions can be drawn. At this moment it is my opinion, that civil response to disasters is advisable, since there is no evidence of the disadvantages being larger than the advantages. The fact that so little has been written about it, may indicate that it is not such a big issue. Further research at this point is necessary however, to prove this statement right or wrong.

Must citizens be stimulated to respond to disasters?

If we take into consideration the convergence of people and goods, we see that a part of this question has already been answered. Lots of people simply do respond to disasters and do not have to be stimulated to help other people. On the other hand there are also people who do not come and offer their help, so there is some extra potential of citizens, which might be worthwhile attracting. The question is whether the government should put an effort in attracting more people to come and help, given the fact that all this help causes logistic problems and coordination of all this help is difficult. The handling of this convergence seems to be a problem which must be solved first, before extra volunteers are stimulated to go and help at the disaster scene. Then there is the problem of the volunteer rescuers becoming injured at the disaster scene, or injuring other people in their attempts to rescue them. In order to overcome these problems it may be necessary to inform people about the best way to respond to disasters and to offer their help.

Considering all this, we think that at this moment citizen response itself does not need to be stimulated by the government. What needs to be stimulated is the proper way in which this help is offered. In this way the disadvantages of civil response can be minimized.

Can citizens be stimulated to respond (differently) to disasters?

As mentioned earlier, the literature search also focused on distinctive characteristics and conditions which determine whether and to what extent people will respond to disasters, as well as the possibilities of the government to affect these characteristics and conditions in order to stimulate citizen participation.

Literature shows a somewhat scattered pattern of characteristics and conditions that determine people's response to disasters. With respect to the characteristics it seems that especially white, young (18-29 years), males from the social mid-class actively respond to disasters (Wenger and James 1994, Drabek 1986, Barton 1969). When it comes to preparing to disasters, several studies show that women play a more important role in preparing for disasters than men (Mileti 1999, Ruitenbergh and Helsloot 2004). Regarding age it appears that younger people (21-40 years) take warnings from the government more seriously and prepare themselves better for disasters than older people (Drabek 1986).

Regarding ethnicity an important note is made by Drabek (1986), who infers that not ethnicity determines the reaction to disasters, but the extent to which people have access to official information. If people are badly informed about what is going on and what actions they can take, it is not surprising they do not know what to do in order to prepare and respond to disasters.

The extent to which people are informed about the disaster therefore is one of the conditions which determine the way people respond to disasters. Being part of a social network also plays a role. Women often appear to be better informed about possible threats, either via the media, or via their social networks (Mileti 1999, Ruitenberg and Helsloot 2004).

Another condition is having previous experience with similar disasters. The influence of previous experiences with disasters is ambiguous. There is some evidence that people with previous experiences are better prepared for the disaster they have already experienced (Miller Canzler 2004). Other studies show that people with previous experience with a disaster are more negligent if they did not suffer any damage from this previous disaster (Miller Canzler 2004).

Considering the fact that there are several characteristics and conditions that determine whether or not people participate in disaster response, we may conclude that, when we want to change the way people participate in response to disasters, the government should aim at the young males from the social mid class. The question is however how this change of response can be achieved. One should think that this is best achieved by informing people what to do in case of disaster before the disaster has taken place. Literature has shown however, that it is difficult to engage people in preparing to disasters. People do not tend to prepare themselves for accidents that have a little chance of occurrence (Drabek 1986, Buckle et al. 2003, Godschalk et al. 2003, Ruitenberg and Helsloot 2004). They do on the other hand prepare themselves for accidents which are easier to imagine, such as accidents in and around the house. Therefore it is better to educate and inform people about what to do in everyday accidents: if people know how to act in these situations, they may also effectively use this knowledge in disaster situations (Ruitenberg and Helsloot 2004). Recommendations of studies in the field of bystander response support these findings. They also conclude that it is desirable to train as many people as possible in first aid (Pelinka et al. 2004, Thierbach et al. 2004, Herlitz 2005).

What is the attitude of government and emergency services towards citizen response?

In our literature search concerning the attitude of government and emergency services towards participation of civilians in response to disasters, it appeared that the attitude differs. There are examples of disasters where professional emergency responders worked together with civil responders (Aguirre et. al 1993). Examples of disasters where there was not much cooperation between civil and professional responders are however also present (Tierney and Goltz 1998).

When it comes to preparedness, then the official emergency services appear not to take civil response into account. Disaster preparedness plans and trainings are based on myths of panic, disorder and dependency/passivity and not on actual behavior of citizens (Auf der Heide, 2004). In 1954 Quarantelli already pointed out that people do not panic in case of disaster. Also Auf der Heide (2004) states that 'The issue of panic in disasters is frequently clouded by a lack of understanding what the term means. The word is often very loosely and incorrectly used to describe virtually any type of fear, flight or uncoordinated activity.' He describes panic as: 'irrational, groundless or hysterical flight that is carried out with complete disregard for others.' Research shows that several conditions must be present simultaneously to trigger panic (Auf der Heide, 2004):

- the victim perceives an immediate threat of entrapment in a confined space.
- escape routes seem to be rapidly closing

- flight seems to be the only way to survive
- no one is available to help.

There are a lot more studies which support Quarantelli's and Auf der Heide's findings, amongst others Drabek (1986), Quarantelli (1989), Perry and Lindell (2003), Dwyer and Flynn (2005).

Also the expectation of dependency of the emergency services has been proved wrong by many studies (Barton 1969, Drabek 1986, Quarantelli 1989, Ruitenberg and Helsloot 2004, Auf der Heide 2006). The same holds for the misconception of disorder and looting (Drabek 1986, Quarantelli 1989, Quarantelli 1994, Auf der Heide 2004, Jong and Helsloot 2005, Barsky et al. 2006).

As preparedness plans are based on the previous mentioned myths, emergency services have not prepared themselves for the fact that people massively respond to disasters and want to help. This means that the massive flow of people and goods is not accounted for and becomes a problem for the emergency services, rather than an expansion of means (Quarantelli 1997, Drabek and McEntire 2003, Auf der Heide 2004 and 2006).

Recommendations from the literature review

The literature review shows, that civil response to disasters always occurs and that civilians rescue most people. Civil response to disasters therefore is a desirable and inevitable phenomenon, which does not need to be stimulated, but should be cherished. Emergency services therefore should take this civil response into account when they prepare themselves for emergencies. Until now, disaster preparedness plans are based on myths of panic, social disorder and apathy, which are clearly misconceptions. Emergency services appear to have different attitudes towards civil response, when disaster strikes. There are examples, where emergency services do not know how to handle this massive response. However there are also examples where emergency services and volunteers cooperate very well.

It is not a surprise that recommendations from the literature mainly aim at emergency services and how they can better prepare themselves to handle civil response in case of disasters. Recommendations found are:

- Take, in the disaster preparedness plans, into account that civilians will massively respond to disasters and that large flows of people and materiel can be involved (Quarantelli 1997, Drabek and McEntire 2003, Auf der Heide 2004 and 2006);
- ensure a good information provision service when disaster has stricken (Barton 1969);
- establish a communication center as soon as possible, in order to coordinate help from whoever offers help (Barton 1969);
- appoint a leader for coordination of civilians wanting to help and designate groups of civilians to certain areas (Barton 1969, Quarantelli 1997, Auf der Heide 2004);
- try to activate civilians as much as possible to join already organized groups of responding citizens, rather than acting on their own (Quarantelli 1997);
- provide the public with first aid and disaster skills (Barton 1969, Pelinka et al. 2004, Thierbach 2004, Herlitz 2005, Auf der Heide 2006).

Findings of the Dutch case studies

In order to compare the findings in the international literature to the Dutch situation, four Dutch cases have been analyzed for the following aspects:

- characteristics and conditions of citizens responding to disasters;
- behavior of citizens responding to disasters:
 - panic;
 - public disorder;
 - dependency/passivity;
- cooperation between volunteers and professional emergency services in response to disasters;
- preparedness of professional emergency services regarding citizen response to disasters.

The cases which have been analyzed are: the plane crash in Amsterdam in 1993, the flooding of several rivers in the province of Gelderland in 1995, the fireworks disaster in Enschede in 2000 and the pub fire in Volendam in 2001.

A brief description of the disasters is included hereafter. In table 1 the various forms of civil response in the four cases are shown. In table 2 the findings of the case studies are presented.

Plane crash 1993

At October 4 1993 a cargo plane from EL-Al crashed into an apartment building in Amsterdam, Bijlmermeer. 43 people were killed, amongst whom four members of the plane crew. Two people suffered severe burns and about 45 people had minor injuries.

Flooding rivers 1995

At January 30 1995 the emergency management team of the region Nijmegen decided to evacuate an area which was endangered of flooding from several rivers. Other regions followed. All together, within five days 250.000 people were evacuated, of whom 12.500 persons were taken care of by the government

Fireworks disaster 2000

At May 25 2000 a storage of fireworks exploded in Enschede. More than 10.000 people were made homeless, 22 people were killed and 947 wounded persons were registered. The first day 700 people were taken care of in accommodations provided by the government. Of these people, 380 stayed only one night, 184 people stayed two nights and 97 people stayed three nights.

Pub fire 2001

Shortly after midnight at January 1 2001 a short but severe and intense fire occurred in a pub in Volendam. The pub was located at the attic of the premises. About 350 people, mainly youngsters, were present at that time. The capacity of the emergency exits was not enough to get the people out quick enough. 14 people were killed and 245 people were injured, of who 182 were taken into hospital (112 of these 182 were taken into intensive care). The other victims were taken care of by their own families and/ or friends.

Table 1 Types of civil response in four Dutch disasters.

Civil response	Plane crash 1993	Flooding rivers 1995	Fireworks 2000	Pub fire 2001
Alert	+	-	+	+
Search and rescue	+	-	+	+
Give first aid	+	-	+	+
Give psycho sociological care	+	+	+	+
Transport victims to hospital	+	-	+	+
Help evacuate	not applicable	+	-	not applicable
Give shelter at own home	+	+	+	+
Organize and equip shelters	+	-	+	+
Take care of people in shelter	unknown	+	+	+
Donate money and goods	-	-	+	+
Reaccommodate	+	+	+	-

Table 2 Four Dutch disasters compared to findings from international literature review

	Plane crash 1993	Flooding rivers 1995	Fireworks 2000	Pub fire 2001
Citizen characteristics	Lower social class; ethnic minorities, illegal immigrants	Various	Working class	In pub: youngsters outside pub: youngsters, family and friends
Panic	None	None	None	In the pub people panicked. Outside no panic.
Public disorder	One report of looting	None	None	None
Dependency/ passivity	More than 100 people rescued themselves/ were rescued by volunteers. 8 persons (appr. 10 %) were rescued by emergency services. On the other hand, reports of hundreds of people walking around in a shattered way. These people were taken care of by emergency services.	Many initiatives to help from the entire community. No numbers known of people who rescued themselves/ were rescued by the emergency services. 95% of the people arranged their own evacuation and place to stay. 5% was taken care of by the government.	Many initiatives to help from the entire community. No numbers known of people who rescued themselves/ were rescued by the emergency services. After the disaster over 93% of the people arranged their own place to stay. Less than 7% was taken care of by the government.	Many initiatives to help from the entire community. No numbers known of people who rescued themselves/ were rescued by the emergency services. After the disaster all people were taken care of by volunteers in their own community of Volendam.
Cooperation volunteers and professionals	Some volunteers acted aggressively towards professionals, urging them to	No cooperation between volunteers and professionals; volunteers went their own way.	Some kind of cooperation existed in shelters, where professionals coordinated the	Volunteers were very opposed to professional emergency services. In psychosocial

	Plane crash 1993	Flooding rivers 1995	Fireworks 2000	Pub fire 2001
	hurry up		actions of volunteers	aftercare professionals and volunteers cooperated within 'Support project'.
Preparedness for citizen response	None	The government and emergency services prepared transport and shelter for 25% of the people. In reality only 5% used the arranged transport and shelter.	Emergency services were overwhelmed by the large number of people and goods emerging at the disaster scene (in order to help). This was not accounted for in disaster plans.	Emergency services were not prepared for the hostile attitude towards professional emergency care.

Discussion and recommendations

Comparing the results from the Dutch case studies to the results of the literature review, the following can be concluded.

Concerning the characteristics of people who respond to disasters, we do not have enough information to make a sound pronouncement. However, in all four analyzed disasters in the Netherlands we see a massive civil response to disasters. Also it is shown that in these cases, the emergency services were not prepared for this massive response. In disaster preparedness plans especially the number of people who can take care of themselves was underestimated. In Volendam (a community with a strong sense of solidarity) emergency services were not prepared to the hostile attitude towards professional emergency care.

Apathy proved in all four cases clearly to be (no more than) a myth. In the Bijlmer disaster there was one report of looting, so looting cannot completely be ruled out for being a myth. The myth of panic can indeed in all four cases be called a myth. Only in Volendam, youngsters present in the pub panicked. As there were too little emergency exits for all the persons present and there was a direct and life-threatening fire and nobody from outside was able to help the people in the burning attic, these circumstances fit the category of conditions when people panic as described by Auf der Heide earlier in this article.

Finally, with respect to the cooperation between volunteers and emergency service professionals it can be concluded that in most of the cases this cooperation was not shown. All together it can be concluded that the facts found in the four cases in the Netherlands support the findings in the literature survey. Therefore the recommendations made in the literature review also seem to be applicable to the Dutch situation. More specifically, for the Netherlands the following recommendations can be made for preparedness and response to disasters:

When it comes to preparedness:

- Massive response to disasters from civilians must be accounted for in preparedness plans:
 - The expected percentage of people needing help with transport to or finding accommodation can be downsized from 25% to 10% and possibly even to 5%. Further research is needed to confirm these figures.
 - Plans to spread injured people over several hospitals should take into account that most of the injured people will be transported by own means to the

nearest hospital. As a result of this, hospitals in the vicinity of the disaster will quickly become overcrowded.

- This means that it should be considered not to send ambulances to the nearest hospitals, but to always let them drive to hospitals in other regions, or even abroad.
- Another possibility to deal with this problem is to find solutions to quickly enlarge the capacity of the nearest hospital, such as mobile units, like the in The Netherlands used so-called SIGMA-teams (teams for quick medical assist).
- In order to deal with the large amount of people coming to the disaster scene to donate goods, it is advised that emergency agencies should enter into an agreement with a distribution firm, preferably having several distribution centers at its disposal. People can be asked to deliver their goods to a distribution center away from the disaster scene. In this way people bringing goods will not disturb search and rescue activities at the disaster scene.
- Behavior of panic and apathy should not be part of training material and exercises. Further research is needed for the aspect of looting, in order to confirm or refute this behavior in case of disaster.
- In order to effectively coordinate the response of people in times of disaster, it is advised that the government should try to activate civilians as much as possible to participate in associations in their community, especially in their own neighborhood. In this way, in case of disaster, people can be coordinated via their leaders.

When it comes to response it is essential that people wanting to offer their help, can do this in such a way that it contributes to fighting the disaster:

- In order to use all the help that is offered, let civilians as much as possible carry on with their helping behavior and try to facilitate this. Do not take over tasks from civilians that are carried out in a proper way.
- In order to make sure civilians know how their help can be offered in an effective way, they should shortly after the disaster has stricken be informed about what has happened, what the government is doing, what help from civilians is needed and where civilians can report themselves to offer their help.
- establish a communication center as soon as possible, in order to coordinate help from whoever offers help;
- appoint a leader for coordination of civilians wanting to help and designate groups of civilians to certain areas.

In the Netherlands, the Netherlands Institute for Safety will incorporate these recommendations in education and training material for the Dutch emergency services.

The NIFV is currently working on further research, investigating what specific responding behavior civilians express in different parts of The Netherlands and in different types of disaster. Also the attitude of the emergency services in different parts of The Netherlands towards civil response will be investigated.

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