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## Risk communication policy design: Cyprus compared to France and the Netherlands

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This study aims at analyzing differences between risk communication policies in Cyprus, compared to the Netherlands, and France. It analyzes risk communication policies indirectly through a qualitative analysis of the information provided by official websites, which are considered to be proxies of these policies. The websites review will focus on the type of the information disclosed online, and the similarities and differences between the websites, regarding the information provided, the way it is communicated, the backing on credible sources, and the supplying of more information if desired, but also simply through the presenting of the WebPages. The results indicate that the Netherlands and France have created risk dedicated websites besides the ministries' websites with information on risks, prevention and the authorities' actions. There is a gap between strategies. The Dutch strategy is to give more responsibilities to the public, by encouraging individuals to be resilient and responsible for their own safety at a certain level by promoting preventive behaviors. The French strategy is to provide risk-dedicated information to the public, also on prevention and government actions. Opposed to this, the Cypriot authorities simply avoid this strategic question by confining the risk communication to the crisis phase, without entrusting people with a role in risk management, and by strictly one-directional communication, with government delivering and the public digesting (or not). Suggestions for risk communication policy development are discussed.

**Keywords:** risk communication; comparative website analysis; Cyprus; France; The Netherlands

### Introduction

Risk communication is an important field of research for present day risk and crisis management. In this paper, we focus primarily on natural and industrial risks. Communicating risk to the public is first a medium to establish and maintain preventive behaviors and protective actions by informing and educating populations about the risks they live with, giving them warnings and emergency information during an event (crisis communication), and combining problem solving and conflict resolution (Covello 1992). It makes the individual and society key players in prevention, and enables the individual to make an informed decision on risk-related behavior, giving

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the opportunity to the authorities and the emergency services to solve a crisis more efficiently. The question is how to arouse adaptive reactions in the public, whether in information seeking, in adopting preventive behaviors, or in building a strong risk culture to make the risk decision-making process fall within the general culture through generations.

This study is based on a comparison of risk communication policies in three European countries: two of them have gained considerable experience over time – France and the Netherlands – and a country willing to set up a system with better results than the current system – Cyprus. The Cypriot system is not very clear in terms of risk communication. Risk culture seems to be relatively poor or non-existent, and one might wonder whether current measures taken to raise awareness really convince the Cypriot population, or the authorities for that matter. Indeed, if nowadays the main approach of risk communication systems is a bottom-up one, called a two-way or interactive communication, the Cypriot governmental organizations keep informing the public through ‘enlightenment’.

Due to its history relatively poor of natural and industrial disasters, Cypriots do seem to avoid questions related to risk and the precautionary measures given by the authorities. However, following a particularly large fire in early June 2014 in the Limassol area, an opposition Member of Parliament demanded an inquiry about the measures taken by the authorities on population’s health in the area. Press coverage of the incident indicated that people want access to more information than is currently provided on risks and preventive measures (Psyllides 2014). Information about fires can be found on the Cypriot Civil Defense website: presumably people could not find it or were unaware of the existence of such a website, highlighting some of the limitations of one-way risk communication.

The Cypriot risk communication is defined by official documents: it is ‘communicating with the public before an event just to get them aware of it and how to protect themselves and how to manage things during crisis.’ The main issues for Cyprus seem to be the lack of funds and a possible lack of motivation among Cypriots. Opposite to that, the Dutch system is characterized by an ongoing communication, based on frequent studies and actions implying the public and well-supplied websites. The Dutch use many studies to understand people and modify the system according to the findings. The Cypriots seem skeptical about the public interest in risks but hope for a parallel change with improvement of risk communication. The Dutch government wants people to adopt measures and adaptive behaviors by giving them responsibilities. It is a key point in risk policy in the Netherlands to make the individual the first actor in his own safety. It is assumed that giving more responsibilities to the public may be the best way to motivate people, especially because of the uncertainty linked to human behaviors.

## Research questions

- This study aims at analyzing differences between risk communication policies in Cyprus, a country with relatively little risk communication experience compared to the Netherlands, and France, which have risk communication incorporated in their risk and disaster management policies for quite some time.
- Based on theoretical risk communication notions (see next paragraph) and given their past regarding disasters, it will analyze risk communication policies

indirectly through a qualitative analysis of the information provided by official websites.

- Official risk websites are considered to be proxies of a governments risk communication policy depending on the information provided, the way it is communicated, the backing on credible sources and the supplying of more information if desired, but also simply through the presentation of the WebPages.
- The websites review will focus on the type of the information disclosed online, and the similarities and differences between the websites.

### **The ‘theory’ behind risk communication**

Most individuals do not seem to possess sufficient knowledge in science and technology to be able to evaluate a technological or man-made threat – it is possible aftermath and benefits (Gregory and Miller 1998). They are dependent on the authorities and experts, and the information they provide (Earle and Cvetkovich 1995); with more complex risks people are more dependent. Two significantly different risk communication strategies are identified: one-way or top-down communication and two-way or interactive or bottom-up communication. One-way strategies provide governmental organizations with full control over the communication. Security and intervention plans have more priority than prevention, and the actual risk communication is mostly done during the ‘hot phase’ (crisis communication) in order to channel and monitor the public (Fessenden-Raden, Fitchen, and Heath 1987). Information is directly provided by experts who select the knowledge they see as necessary to face a threat (Gough 2003). The opinions and perceptions of people are not taken into account while there is a difference between technical experts, who have to lead objective assessments, and people directly affected by a disaster, who have totally different risk perceptions (Slovic 1987).

It is assumed that one-way strategies will evolve into interactive strategies through history and trial-and-error: disasters or incidents that the country has faced and which forced authorities to amend their strategy due to popular or political demand. The interactive strategy comprises a long-term ongoing process, which aims at building a relation between the authorities and (specific groups in) the general public. Dialog is the centerpiece of this strategy, through which the institutions attempt to understand the emotions and perceptions of people, build and modify the management thanks to this knowledge, and try to maintain trust. It relies to a lesser degree on data provided by experts than the one-sided approach. Important aspect is the subjective data gathered through studies about populations, their characteristics, their behaviors, and their opinions on risks and uncertainty. This approach is supported by research in risk communication (Griffin, Dunwoody, and Neuwirth 1999; Kahlor 2007; Renn and Levine 1991; Rowan 1996; Slovic 1999; ter Huurne, Griffin and Gutteling 2009) and gives the public a key role in risk management by assigning them more responsibilities. It motivates people to adopt preventive behaviors and in the long run, limits human but also economic consequences of disasters. It is based on the acknowledgment that the public is neither irrational nor ignorant (Slovic 1993, 1999) and no longer educating people is the major stake in risk communication. And finally, this input allows the communicators to address issues that are seen as relevant by the public too.

Ideally, the interactive strategy is adaptive to the current popular trends and issues, motivating people to get involved and act on their own scale to prevent risks. However, some important questions remain. The individual's reactions to a real crisis are unclear and studies that attempt to understand this process leave us with margins of uncertainty (Kievik and Gutteling 2011). Arousing awareness as well as stimulating preventive behaviors is a key aspect of the communication, but it is also something that is relatively understudied. More particular in the Cyprus situation, with its relative lack of experience in disasters and incidents and its presumed low level of risk culture, one might wonder how it would be possible to stimulate a more interactive communication strategy.

### ***The relation between risk perception and trust in risk management organisations***

Trust and risk perception play important roles in an individual's reactions to a threat. Risk perception is a subjective notion which varies from person to person and which influences the way an individual responds to a risk (Ter Huurne, Griffin, and Gutteling 2009). Socio-demographic factors such as gender, age, education level, occupation, and household income are related to people's perceptions and acceptance of risks (Huang et al. 2013). While experts pay attention to rational and objective assessments in order to define response procedures to a threat, the general public trusts its own visions, opinions, and perceptions. High-to-moderate levels of risk perception can induce changes of behaviors and adoption of preventive measures (Miceli, Sotgiu, and Settanni 2007). Risk perception studies describe its psychological antecedents. Many studies and conceptual models identify factors like perceived vulnerability (how susceptible an individual feels to the risk) and perceived severity (how serious an individual perceives a particular risk to his or her life) (Floyd, Prentice-Dunn, and Rogers 2000; Kievik, ter Huurne, and Gutteling 2012; Rogers 1975, 1983; Witte and Allen 2000).

For many present-day risks, people rely heavily on governmental agencies and the information they provide. Institutional trust is 'the willingness to rely on those who have the responsibility for making decisions and taking actions related to the management of technology, the environment, or other realms of public health and safety' (Siegrist, Cvetkovich, and Roth 2000). Trust enables cooperation and an efficient risk communication; for that reason, risk communication presumes a good link of trust between the authorities and the general public (Slovic 1993; Walker et al. 1999). When people trust an organization, positive information will grow trust and negative information will be put aside (Cvetkovich et al. 2002). Perceptions that have a positive influence on trust are the organization's ability to care, commitment to resolving the risk, competence or expertise, and openness and honesty (Renn and Levine 1991). A lack of trust may amplify risk perception (Groothuis and Miller 1997; Slovic 1999) and provoke anxiety and worry among people (Griffin et al. 2008; Ter Huurne and Gutteling 2008). This lack will counteract the measures taken to motivate people to adopt preventive behaviors and limit the effectiveness of risk communication (Slovic 1999).

### ***The relation between risk perception and efficacy beliefs in risk management***

Efficacy beliefs, divided into self-efficacy and response efficacy, affect the way people behave, their feelings, their wills, and their response to threat and risk

communication. The ones who believe in their own skills and ability to cope with risk will be more willing to act accordingly (Griffin et al. 2008; Witte *no date*). Efficacy beliefs evolve depending on people's risk experiences and are important when it comes to convey the right information to the public, e.g. governmental websites.

The protection motivation theory explains the conscious and deliberate response of an individual to a threat by appraising costs and benefits of the threat (Floyd, Prentice-Dunn, and Rogers 2000; Rogers 1975, 1983). The result is adaptive or maladaptive behavior depending on the protection motivation arousal. The extended parallel process model (Witte 1992; Witte and Allen 2000) identifies three potential outcomes of appraising a threat. When the threat is perceived as low or trivial, the individual will not be motivated to invest any effort, and ignore any new information. Is the threat perceived as serious, personally relevant and believable, individuals will feel some level of fear and will be motivated to reduce or remove their fear. They will also be motivated to assess their behavioral coping potential (self-efficacy) appraisal. The behavioral information provided in a risk communication message will be evaluated too (response efficacy). Individuals that have no data to judge the recommendations' efficacy will use their experience and past beliefs (Zaalberg et al. 2009). These evaluations will eventually lead to either adopting preventive behavior or to reducing the threat psychologically by employing defense mechanisms (denial, defensive avoidance, or reactance) (Witte and Allen 2000).

### ***Information seeking as preventive behavior***

Studies indicate that high levels of risk perception, self-efficacy and response efficacy promote adoption of preventive behaviors (Kievik and Gutteling 2011; Smith, Ferrara, and Witte 2007; Witte and Allen 2000). To motivate people to adopt these behaviors, one of the actions might be to stimulate their risk information seeking. Information seeking can be defined as a deliberate effort to acquire information in response to a need or gap in one's knowledge (Case et al. 2005; Griffin, Dunwoody, and Neuwirth 1999; Griffin et al. 2008). It is widely assumed that people will seek information when the topic becomes relevant (Alaszewski 2005), when they get involved in safety and risks (Johnson 2005), when they perceive a gap between what they know and what is necessary for them to face a risk, or when they want to reduce uncertainty. The more uncertain they are, the more they will seek information (Atkin 1972; Griffin et al. 2008). Another reason is social pressure: individuals are always comparing themselves to others to be a part of a community (Eagly and Chaiken 1993), and information seeking helps to improve relations (Atkin 1972; Radecki and Jaccard 1995).

Lion, Meertens, and Bot (2002) describe which pattern is usually followed by people when they do some research about risk: first, they want to understand the risk itself and its possible consequences, and then methods of self-protection, or how to positively influence ongoing actions to minimize risk. When they believe no personal action is possible, they will seek information about the action of competent authorities. The RISP model (Griffin, Dunwoody, and Neuwirth 1999) assumes that an individual will be satisfied by his knowledge when it reaches a threshold, different from person to person. Anxiety or concern may influence the perception of this threshold and encourage additional seeking.

## Methodology

So in conclusion, the risk communication literature seems to indicate that clear and practical information that is easily available, that is understandable, trusted, and applicable in everyday life, will stimulate adopting preventive behavior on the long-term, and increase the belief in self-capacities and the abilities to respond adequately to risk. Furthermore, people will need to assess a risk as real and personally relevant. The Internet is the first communication means used by the authorities in many countries who post information for the general public, just to inform people in the case of a one-way communication or to motivate people to take self-protective measures and promote more information seeking about the risks and prevention in the case of two-way or interactive communication. That is why official websites may be seen as indicative of a country's communication system depending on the information provided, the way it is communicated, the backing on credible sources and the supplying of more information if desired, but also simply through the presenting of the WebPages.

A qualitative comparison of the Cypriot, Dutch, and French official websites was done studying first contents and design, then evaluating them using these risk communication notions. The examinations of the websites were done in the native languages of the three countries.<sup>1</sup> The risks primarily analyzed were natural and industrial risks. Other risks like road safety issues or security in general were not taken into account. The websites were identified for each country through a short list of likely actors in risk communication: Ministry of Defense, Civil Defense, and Ministry of the Interior, Ministry of the Environment, Ministry of Labor, and Ministry of Health. Additional websites were found by examining the links on the ministries websites, and with a Google search using the keywords 'risk' and 'prevention' with the name of the country. The study confines the findings to a (non-exhaustive) list of official websites, with the focus on comparative sites in each of the three countries. Additional websites were identified for the Netherlands and France without Cyprus equivalents. Table 1 provides a list of the consulted websites per country.

The websites were systematically examined on 12 website comparison elements. This list was used to further comment on the content of each field relying on risk communication notions (Fitzpatrick-Lewis et al. 2010; Gore and Bracken 2005; Huang et al. 2013; Kievik and Gutteling 2011; Kievik, ter Huurne, and Gutteling 2012; MacDonald, Smith, and Appleton 2012; Miceli, Sotgiu, and Settanni 2007; Ter Huurne and Gutteling 2008, 2009; Verroen, Gutteling, and De Vries 2013; Witte and Allen 2000). All observations were gathered in an Excel table. Table 2 provides the list of comparison elements.

## Results

Two analyses were conducted: the first about the contents and presentation of the websites, and the second about the use of risk communication strategy and delivery.

### *General perspective of content and presentation*

#### *France*

Three types of websites were found: ministerial websites with general information, the ones created by the ministries but specialized in risk, and the ones from other organizations dedicated to risk and backed up by the authorities (see Table 1).

Table 1. List of consulted websites.

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*Cyprus*

Ministry of the Interior (<http://www.moi.gov.cy/>)

Civil defense [http://www.moi.gov.cy/moi/cd/cd.nsf/index\\_gr/index\\_gr?opendocument](http://www.moi.gov.cy/moi/cd/cd.nsf/index_gr/index_gr?opendocument)

Public Health Services ([http://www.moh.gov.cy/MOH/mphs/phs.nsf/DMLindex\\_gr/DMLindex\\_gr?OpenDocument](http://www.moh.gov.cy/MOH/mphs/phs.nsf/DMLindex_gr/DMLindex_gr?OpenDocument))

Ministry of Labor ([http://www.mlsi.gov.cy/mlsi/dli/dli.nsf/dmlindex\\_gr/dmlindex\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/dli/dli.nsf/dmlindex_gr/dmlindex_gr?OpenDocument))

Department of Environment ([http://www.moa.gov.cy/moa/environment/environment.nsf/index\\_gr/index\\_gr?opendocument](http://www.moa.gov.cy/moa/environment/environment.nsf/index_gr/index_gr?opendocument))

Fire services ([http://www.fs.gov.cy/fs/fs.nsf/index\\_gr/index\\_gr?opendocument](http://www.fs.gov.cy/fs/fs.nsf/index_gr/index_gr?opendocument))

*The Netherlands*

Ministry of the Interior (X)

Ministry of Defense (<http://www.defensie.nl/>)

Ministry of Health (X)

Ministry of Labor (X)

Ministry of Infrastructure and the Environment (<http://www.rijksoverheid.nl/ministeries/ienm>)

Central government website (Security and Terrorism) (<http://www.rijksoverheid.nl/onderwerpen/veiligheid-en-terrorismebestrijding>)

NCTV (<http://www.nctv.nl/>)

TwenteVeilig (<http://www.twenteveilig.nl/>)

ZeelandVeilig (<http://www.zeelandveilig.nl/>)

Risicokaart (<http://www.risicokaart.nl/>)

‘Think ahead’ campaign (<http://www.denkvooruit.nl/>)

*France*

Ministry of the Interior (<http://www.interieur.gouv.fr/>)

Ministry of Health (<http://www.sante.gouv.fr/>)

Ministry of Labor (<http://travail-emploi.gouv.fr/>)

Ministry of Sustainable Development and the Environment (<http://www.developpement-durable.gouv.fr/>)

Risques.gouv (<http://www.risques.gouv.fr/>)

Prim.net (<http://www.risques.gouv.fr/>)

IRMa (<http://www.irma-grenoble.com/>)

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Note: The websites with the cross (X) do not contain information about risk and crisis: they were eliminated from the list after consultation.

The first category websites provide very general information, mainly about the ministries, their actions and activities, especially administrative information. They provide some preventive advice for their own policy domain: for example, the Ministry of the Interior recommends specific responses (depending the individual’s location) to a warning broadcast by an alarm system inherited from the World Wars. The Ministry of Health provides information about how to prevent the consequences of heat waves or pandemics. The Ministry of Labor gives information about work-related risk, and the Ministry of the Environment devotes an entire section to risk because usually, natural or industrial disasters have impact on the environment. Table 3 presents a brief summary of the contents provided in the websites.

The official risk-and-prevention dedicated websites provide information about risks, prevention, and action of the authorities. Among this type of websites are [prim.net](http://www.risques.gouv.fr/) which is a portal to other websites, and [risques.gouv](http://www.risques.gouv.fr/) which provides information about risk and preventive measures; they differ in their objectives and information they provide. Some information is redundant with the ministries’ websites. Tools for identifying risks in one’s immediate environment are supplied.



Table 2. List of the different comparison fields.

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- Overview
- Home
- Main menu
- Secondary pages and menus
- Presentation of information
- Accessibility
- Preventive means of communication
- Videos
- Sounds
- Preventive information
- Risk information
- Warning systems
- FAQ
- Emergency numbers
- Authorities actions
- Right to information
- Extra information
- News and activities
- Downloads
- Education

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Table 3. Repartition of information for French, Dutch and Cypriot governmental websites.

	About risk	About prevention	About authorities' actions
<i>France</i>			
Ministry of the Interior		X	X
Ministry of Health		X	X
Ministry of Labor		X	X
Ministry of the Environment	X	X	X
Risques.gouv	X	X	X
Prim.net	X	X	
IRMa	X	X	
<i>Netherlands</i>			
Ministry of Defense	X		X
Central website (security and terrorism)		X	X
Ministry Infrastructure/Environment	X	X	X
NCTV	X	X	X
Zeeland Veilig	X	X	X
Twente Veilig	X	X	X
Risicokaart	X	X	
Campaign 'think ahead'	X	X	
<i>Cyprus</i>			
Ministry of Agriculture			X
Ministry of Health	X		X
Ministry of Labor			
Ministry of the Interior			
Civil Defense		X	X
Fire services	X	X	X

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Mostly, information and tools differ from the advice given by the first category's websites, probably in order to prevent overloading these sites.

The third category websites are run by independent associations like the Major Risks Institute of Grenoble (IRMa). Some information provided is redundant with the second category, but it is another source of information with an external experts' point of view. One can consider redundancy as a proof of nonexistent communication between the ministries about the subject. On the other hand, redundancies allow for comparison of information which may be good for its trustworthiness. Finding contradictory information between the websites could be confusing and reduces trustworthiness.

The French websites are generally well presented and combine information with practicality thanks to simple homepages and shortcuts to the most important or most consulted sections, like 'news', links to additional and useful websites and images presenting current campaigns or topics. Common sections found are 'topics', 'news', 'organization's role' and particularly for the dedicated websites 'prevention' and 'risk'. The use of bold sentences, attractive titles, and summaries of most of contents is found in every website. The main menus were practical and dynamic. The French homepage usually is not a presentation of an organization but a meeting point where the user can understand the meaning of the website and quickly reach what he wants to consult (see e.g. [risques.gouv](http://risques.gouv.fr) or [prim.net](http://prim.net)) through their pleasant and aerated presentation. Other French homepages (e.g. the Ministry of the Interior or the IRMa) are similar to a first page of a newspaper providing dense information, and they might lose the reader already at the beginning of his information seeking. Sometimes, the menus do not allow an easy risk information search, especially if the website is not entirely dedicated to risk communication (e.g. the Ministry of the Interior and Labor).

Most websites chose to classify their contents according to thematic sections. The Ministry of the Interior has chosen to use a presentation of subjects through articles: the good points are frequent updates and suggestions for further reading. This can motivate the user to seek complementary information, or bring unfamiliar information to his attention. The questionable classification of the information compared to [risquesmajeurs.fr](http://risquesmajeurs.fr), which provides a simple menu with a list of articles' themes, is a negative issue. The website of the Ministry of Health presents issues in alphabetical order, which is useful when the user knows exactly what he is looking for, but dissuasive when he is looking for general information without a predetermined pattern.

The websites offer some interactivity with the public, through abundant FAQ reflecting the consideration of public's concerns, and contents that needs user activity to be revealed, e.g. finding existing risks in a city through a zoom on a map in [cartorisque](http://cartorisque) or [risques.gouv](http://risques.gouv), answering questions about risks in a little educational questionnaire in [risques.gouv](http://risques.gouv), presentations of preventive measures through animations like in IRMa website or about risk like for the Ministry of the Environment. Interactivity in websites involves the user more in the process than passive reading. Of course, using FAQ may also indicate another way to organize and present the website's information.

### *The Netherlands*

Two main types of official websites were found: the ministries' websites and the regional safety websites, of which we analyzed the sites for the regions Zeeland and Twente. NCTV website is assumed to be a ministry websites because NCTV is a

part of the Ministry of Security and Justice. The two other ones were kept because of the similarities with the French websites and their singularity. Of the websites of the Dutch safety regions two were selected, because they provide similar information through a slightly different presentation and classification. The websites of the Dutch ministries of the Interior, Health and Labor were not selected because of their lack of information related to risk and prevention.

The ministries' websites are actually grouped into a single governmental portal which provides a lot of information, generally about the ministries themselves, and their policies and specific topics. Everything is connected and common to all the ministries (e.g. there are no distinctions of ministries depending on the subject of the section: if a topic is common to two ministries, both of them provide a link to the section). Concerning risk, the Ministry of Defense provides little information, but explains the action of the authorities, their approach of risk and crisis management, and the organization of management especially about the safety regions. The Security and Terrorism part of the governmental portal presents preventive and risk information about several risk issues (e.g. CBRN risks, floods, and radiation) with downloads; the Ministry of Infrastructure and the Environment sends the user to similar contents because of the existing links between the ministries. The NCTV website gives detailed information about Dutch risk and crisis management, because NCTV is the unit responsible for it. The (Safety regions) 'Veilig' ('Safe') websites are made for each of the 25 Dutch safety regions and provide per region information about the three main risk subjects. The information presented is practical and informal.

Two other risk-dedicated websites are smaller and provide specific information. The Risicokaart (Risk map) shows natural (e.g. flood risk) and industrial risks on a geographical map with additional information and the website of the 'think ahead' campaign, quoted in almost every website talking about risks, provides practical risk-prevention information. The central governmental portal by design has no redundancies by using the same data and even if each website provides information about risk, prevention, and action of the authorities, they complement one another using links between them; similar information can be found on the regional safety websites.

The same uncluttered and quite practical presentation is found for the WebPages of each individual ministry, but the way they chose to put the information in common may lose the user while he seeks information. Each homepage is a portal to different types of information and has various links to other organizations or ministries. Shortcuts to other sections are formulated like suggestions which allow the user to see the overall contents of the website. The menus propose a topic-driven search through a list of themes. Some indicators point out the current situation and many shortcuts help the user to access basic information quickly. The sites propose both a shortlist of subjects and alphabetic topic list. This provides some control to the user regarding the information seeking strategy.

The presentation of regional websites, especially for Zeeland Veilig, seems to be closer to the individual and customized: the presentation is really elaborate in order to make the user willing to seek information. Practical and efficient, they provide the current state of alert with the instructions adapted to the situation. The Risicokaart and 'think ahead' presentations are very functional, with a useful menu, even if they are very different. The current sections of information are 'news,' 'topics,' 'organization,' and 'downloads,' but 'risks' are common for the regional and particular websites (see also Table 3).

*Cyprus*

For the Ministry of Agriculture and the Ministry of Health, only two sub-departments were taken into account, because of the lack of risk and preventive information on both general websites. The police department website was not studied for the same reasons. No additional risk-dedicated websites exist in Cyprus. On the governmental websites, information provided is mostly about the ministry/department, its actions, and its policy. The Civil Defense website provides most of information about self-protective measures. Fire services provide specific information about forest fires and measures, and the Public Health Services provide information about preventing sanitary incidents; the major interest of this website is health news and warnings. Specific documents can be downloaded. The Ministry of Labor websites provides information about safety and health in the workplace, in the context of laws applied to prevent industrial disasters by inspecting installations. For the Environment Department, some information about pollution control or nature conservation is provided, mostly about the laws applied and the missions of the department. Because information is restricted to individual sites, there is no redundancy at all. Most Cypriot websites seem to be still ‘under construction’.

A single and simple presentation is adopted by all official websites with minor differences regarding shortcuts to main sections (e.g. on the Civil Defense homepage) or a summary of the latest news. Homepages provide links to other governmental websites and partnerships, and usually a brief description of the ministry/department. The menus are easy to understand and to employ; the menus directly indicate the themes developed in the website. The current sections are ‘news and activities,’ ‘ministry/department,’ and ‘downloads,’ with some specific sections for risks in the Civil Defense and the Fire Service websites.

Significant lack of completeness is an issue in many sections of all websites. This may make the user suspicious and/or disappointed in his information seeking process. Moreover, most of the websites provide information only through documents to download (Greek only). No particular interactivity was seen in the websites and the FAQ were incomplete. The Environment website is alike the Dutch and French website in the presentation, making the user to seek information, but it is relatively poor of information.

***Risk communication strategy and delivery****Types of information*

One of the first pieces of advice provided by risk communication studies is to ‘attend to what kind of information people say they need in order to deal with the potential risks in their lives’ (Ter Huurne, Griffin, and Gutteling 2009). Websites usually provide FAQ sections, made of questions from people seeking complementary and missing information. Their presence and completeness may show that the authorities are aware of people’s needs. Most of the Dutch websites and some of the French contain elaborate FAQ sections, which seem to be employed as a tool in communication. They not only provide answers to (frequently asked) questions, but also serve as a content list of topics that people can view to get informed quickly.

It is not the case for the Cypriot websites which have empty FAQ sections. Many websites give shortcuts to the main sections, like the Cypriot website of Civil Defense with ‘self-protective measures’ and ‘links’. This could be a sign of a

deliberate communication strategy when these links are indicating ‘main routes’ on the sites as indicated by web statistics. However, there is no indication is this.

Risk communication publications recommend to ‘provide the public with information about hazards’, ‘what one could do to protect oneself from possible harm’ and ‘information about what governments and other managers of risk are pursuing to minimize possible risks’ (Ter Huurne and Gutteling 2009). As it was shown in the tables above, the websites do not provide the same type of information or not in the same quantity. The risk dedicated websites (e.g. Veilig and risques.gouv) are the most complete; on the other hand, the Cypriot Civil website is relatively poor of information about risks.

### *Characteristics of presentation*

Talking about information, the researchers suggest to ‘make useful, understandable information readily available’ to people, ‘easily accessible’ as well as ‘personally relevant and appropriate’. Generally, the reading level is relatively low in the websites; with the exception for the websites of the ministries of Labor, and for some contents of the ministries of Health which apparently address a well-informed public (e.g. doctors, or directors of companies). For the usefulness of information, it can be seen through the instructions and advice provided: it is again a matter of knowing what kind of information people are looking for. Closeness and practicality are mainly found in the Dutch Veilig websites and the French website risques.gouv. But when it comes to evaluate the access to information, all the websites providing information about risk were a little difficult to find. An in-depth consultation of the Ministry of the Interior or equivalent is generally useful in the seeking process, and when the individual understands which governmental agencies are responsible for dealing with the threats, it will be easy to find the related websites. On the websites, most of the menus are simple to use and provide an easy access to information. Browsing may be an issue in some websites, like the one of the French Ministry of the Interior (whose menu is in the middle of the webpage) or for the Dutch ministries websites because they are all interconnected. Access to disabled people is also assured by the possibility to change the font size, to increase the contrast of the webpage, or zooming in like in the Riscokaart website. Cypriot websites are not that flexible. All Cypriot websites (except the still in construction Environment website) give information through downloads and never write the essential directly on the WebPages, like the Dutch or the French do. It may be seen as a detail, but when someone does search on the Internet, he may expect to find the most important information directly on the website. The lack of online translation or providing only downloads cannot be considered as the height of accessibility.

Some studying the modes of communicating risks to the public suggest that authorities should ‘incorporate text with visuals (pictures, diagrams)’ (Fitzpatrick-Lewis et al. 2010). Illustrative pictures can be found on almost every website, some diagrams summing instructions can be found on IRMa, French Ministry of the Environment, or representative icons on Zeeland Veilig. The Cypriot flyers use a lot of diagrams to illustrate the information provided.

It is recommended to provide additional information to the public in order to incite it to broaden its knowledge (Ter Huurne and Gutteling 2009). The French website prim.net and the one of the Ministry of the Environment provide portals to other and useful websites, as well as all the websites dedicated to risk. The Cypriot

websites also provide links but usually, it is for partnerships rather than for risk information. Downloads are also an additional source of information, but in the case of Cyprus, it is not additional. To access the complementary information, the user can follow the organizations through the social networks, like Twitter directly integrated in NCTV or the Veilig websites. It is an opportunity to provide updated information using new technologies, in normal times or during crisis. This presence on social networks allows the authorities to reach more people and set up an official source where the individual can be lost in advice provided by other users (see e.g. Verroen, Gutteling, and De Vries 2013). Cyprus uses only the news section, present in every website. French websites, such as the Ministry of the Interior and the Ministry of Health, offer a subscription to breaking news on their websites. Sometimes, videos may complete the written information, providing instructions, explanations on risks, or disasters for the dedicated websites. The governmental websites usually post videos in relation with their activities and their own news.

### *The psychology of providing risk information*

Again about the contents, ‘the advised actions [have to be] perceived by the public as high on self-efficacy and high on response efficacy because the messages delivered are said to be effective under these conditions’ (Kievik and Gutteling 2011). In other words, the instructions must be explained and show that they are useful to deal with the threat and then, support individuals regarding their capacities to implement risk control measures. The instructions provided by the ‘think ahead’ campaign website, the Veilig websites, risques.gouv or the IRMa website follow this logic. The simplicity of the protective measures may help the individual to believe he is able to implement them, and he will understand their utility in his fight against the threat (e.g. risques.gouv explain exactly what to tell on the phone in case of emergency, to be understandable and help the emergency services to be efficient). The Cypriot Civil Defense flyers provide simple measures to take but no further explanation on their usefulness.

It is suggested that the authorities should provide information that would ‘help the public feel confident about getting and using risk information on their own’ (Ter Huurne, Griffin, and Gutteling 2009). In this idea, the French and Dutch authorities try to enable the individual to find the risks that surround him providing the Risicokaart and the Cartorisque, and also devices to identify risks with a postal code.

Social pressure is also suggested as a motive for risk information seeking: individuals may feel it their social duty to be well informed (Ter Huurne, Griffin, and Gutteling 2009). Noticeable examples are found in the French Ministry of the Interior when the authorities use titles like ‘when there is an emergency case, the first actor is you’ or ‘I learn how to protect myself and my family’, or when the public is suggested to realize their own emergency plan with family and neighborhood in risques.gouv.

### **Conclusion and discussion**

The aim of this study was to analyze the differences of risk communication strategies between three European countries. This is done by directly consulting the official websites, which are usually the first means used to communicate about risks.

It was found that the Netherlands and France have created risk dedicated websites besides the ministries' websites. These special websites provide information on risks, prevention and the authorities' actions. The ministries' websites generally dedicate a section to risk in their particular policy domain and refer to complementary official and experts' websites. Furthermore, information is directly written on the website and further information or factsheets are given to complete it. For Cyprus, the Civil Defense website is most complete but it only provides downloads with instructions to face some risks. The French and Dutch websites try to present the information in an understandable, practical and available way via attractive and well-presented websites. Although the Cypriot risk communication is strictly a one-way street, with government delivering and the public digesting, and even when insufficient funds are available, the websites about risk must be at least attractive and useful for the people consulting the pages. First, it would help keeping people interested during their information search and make them more willing to consult the website again in case of changes, updates, or just to remind them of the instructions provided. Secondly, having a nice website could incite people to talk about it to their relatives and then help improve the communication through word of mouth. Then, even if only few people are interested in risk and crisis, it would be an anticipation of the changes in risk communication and in people's interests that may occur in the future.

Based on our observations, and risk communication 'theory', we would suggest that an adequate risk communication website design should at least comprise:

- *Information about risk*: more information about all risks, their nature, the possible aftermath, or feedback about previous disasters in the own country and abroad, as well behavioral suggestions to cope with the risks.
- *A way to identify risks*: maps could help the user to identify the personally relevant risks, e.g. with consulting websites applications like Riscokaart or the Cartorisque.
- *Completeness*: the sections like for example the FAQ should be complete in order to stimulate the user's information seeking. Incomplete sections may be discouraging.
- *Links and complementary information*: links to experts' websites should complete the information provided to enhance its credibility, and to help the user in his search.
- *Presentation*: the presentation should attract people, using pictures, summed up contents, lists, bold words, and any other element that could catch the user's attention.
- *Pictures*: instead of mainly showing the actions and exercises of the authorities, they should illustrate the risks and provide a certain perspective on the urgency of the risk to make people react to the message.
- *Downloads*: they should be additional to the information provided on the website, not be the main part of it.
- *Incorporate a Twitter account or a Facebook page*: it would be the occasion to reach more people and provide regularly updated information on social networks.

The analysis clearly indicates a gap between the Dutch and French strategies, on the one hand, and the Cypriot strategy, on the other. Cyprus seems to be late compared to the others, but factors like history, people, management, and lack of funds

are indicative to explain the stagnancy of the system. The Dutch strategy is to give more responsibilities to the public, by encouraging individuals to be resilient and responsible for their own safety at a certain level by promoting preventive behaviors. This seems to be a tough task to accomplish because the citizen is not compelled to act the way indicated by the authorities. By giving a simple advice, the government restrains its action and impact on the population's behaviors. That is why the authorities hope that people will adopt preventive behaviors without assurance that it will be effective. The Cypriot authorities simply avoid this strategic question by confining the risk communication to the crisis phase, without entrusting people with a role in risk management.

Risk communication experts underline the importance of knowing what kind of information people need to face risks in their daily lives. This knowledge allows determining the amount of information they need, also called information sufficiency. The Dutch authorities seem to have taken into account the particular concerns of the public's by studying their risk perceptions, opinions, and feelings. However, the Cypriot authorities still implement a system based on educating people and providing the information they and experts think is necessary to deal with these potential risks. So far, the way people think or feel about risks, and seek information about it is unknown. Even the information provided on the Internet may be insufficient to fulfill their specific needs. It seems important to 'tailor communication' according the audience targeted (Fitzpatrick-Lewis et al. 2010), like the Netherlands try to do with their interactive approach. The Cypriot strategy can only change successfully in the coming years, when studies aiming at understanding risk perception and information needs of the different groups in the population are being performed. Nevertheless, the practical and ready-to-use criteria are particular to the Dutch system and seem to be obviously a distinctive outcome of several years of using an interactive risk communication strategy. To attest their validity and completeness in the Cyprus context, studies should be done to simply know what people want and what would interest them.

The websites analysis revealed the use of multiple communication means, especially for the Netherlands and France, compared the Cypriot punctual campaigns and poor information WebPages. Frequent communication is necessary to overcome the trend of forgetting knowledge when it is not repeated on a regular and ongoing basis (Fitzpatrick-Lewis et al. 2010). The WebPages seem to be the best means that the authorities can use without substantial funds. It is still a problem because the employment of several means of communication aims at motivating a seeking and protective behavior whereas people do not seem to be intrinsically interested in risk information.

A great discrepancy is experienced when it comes to the public and their abilities to face a risk and to be interested in the area. The various opinions can be a result of a better understanding of the people in the Netherlands thanks to different studies led on their perceptions, opinions, and reactions to a threat. Such factors were not evaluated in Cyprus. Even in the hypothesis of a cultural difference between people, studies should be conducted to understand the Cypriots and adapt risk communication depending on the results found.

### **Recommendations for future studies**

The websites selected may not be representative of all relevant websites for the three countries. The selection was made rather subjectively, by putting oneself in the



seeking individual's shoes by applying a general search engine. However, all governmental ministries were analyzed, and any cross-referencing to dedicated websites was registered, resulting in a set of interesting and representative websites. Moreover, the contents were not entirely analyzed just like a regular individual would do. A more precise future study could analyze the contents of the websites in more detail. In such a future study, a comparison with other countries is suggested too, as well as an analysis of other communication materials than those digitally provided. We assumed that official websites are a good representation of a country's risk communication policy; however, this assumption may need some further testing.

It can be considered that, according to Slovic (1993), risk is not top-of-mind for people when they are not exposed to risk news or risk communication for a long time. Indeed, it can be assumed that the more the authorities try to prevent risk by communication, the more the people will react and insist on more risk management. In the Cypriot context, a better understanding of the public seems to be essential to enhance the current system of risk communication. It may also reveal that people are more interested in risks than authorities at present assume.

Measuring impact on people and effectiveness should also be a step in future studies to enable evidence-based risk communication strategy and policy adjustments. Given that developing a genuine risk communication strategy is a long-term process, it is highly recommended for Cyprus to begin with this as soon as possible.

## Note

1. This also happened to be the native languages of the research team members. Informative but non-systematic conversations were held with some representatives of the governmental organisations publishing websites.

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