

**Building capacity through risk communication strategies in Santa
Fe city, Argentina**

Valeria F. Maurizi,

Public Policy Specialist at UNDP Mexico, Tabasco, Mexico

Silvia E. Fontana,

**Director of the Research Group on DRR at Catholic University of Cordoba, Córdoba,
Argentina**

Introduction

This paper aims to analyze risk communication strategies that had been planned, managed and implemented at the local level in Santa Fe city, Argentina. Describing the methodology phases for the implementation of those strategies and the process of work done with the participation of stakeholders. For this purpose, the different actions and documents produced by the city were analyzed to highlight the factors which made them successful. This paper also, seeks to highlight constraints and threats for mainstreaming risk communication in local public policies for all sectors involved in development in the context of high flood risk.

This study highlights the gaps that should be addressed when local risk communication strategies are implemented. It also points out best institutional practices, constraints in the design and implementation of these strategies.

The City of Santa Fe is the capital of the Argentine province of Santa Fe¹. The province is in the central area of the country, which is a plain area predominantly used for agricultural-livestock activity. Most of its limits are fluvial, located at the meeting of the flood valleys of the Salado river and the Paraná river where 70% of the territory is rivers, lagoons, and marshes. This surrounding geography makes the city susceptible to the threat of flooding.

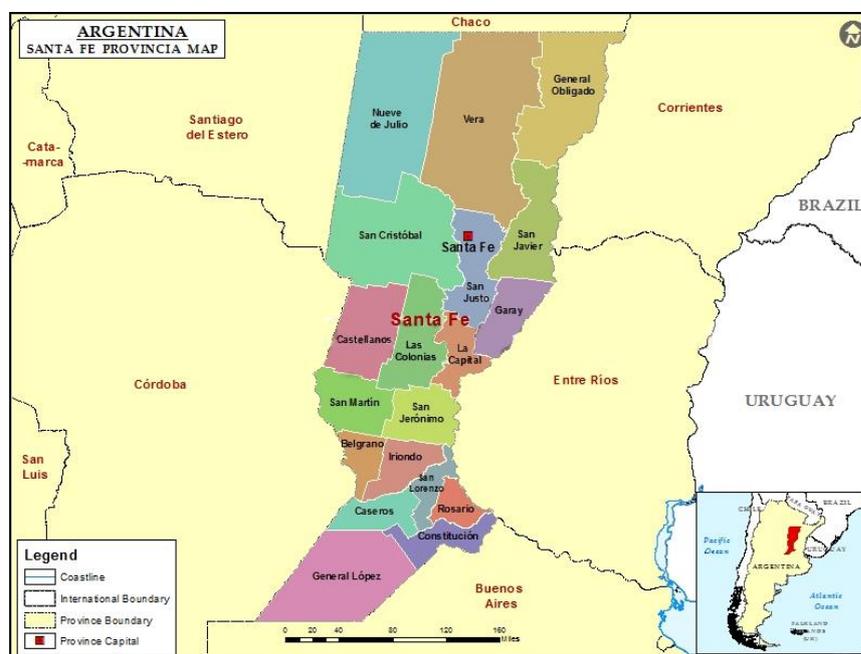


Fig. 1: Santa Fe City geographic location in Santa Fe Province, Argentina. Source: Edited from mapsofworld.com

¹ For further information about the city please visit the official website: <http://www.santafeciudad.gov.ar/>

Flooding incidents have been and are recurrent due to the social and historical conditions of risk of the territory described above. Based on this, the natural causes of the floods in the city of Santa Fe are due to two threats: first, heavy rains; secondly, the floods of the Paraná and Salado rivers that surround it. The last two severe floods suffered by the city of Santa Fe were in 2003 and 2007.

The flood of 2003 was due to the flooding of the Salado River. Overflow entered the city due to one of the mitigation works that remained unfinished, the defense embankment. On that occasion, there were officially 23 dead and an estimated of 130.000 evacuees, although the unofficial figures speak of at least 120 dead². The flood, which occurred in 2007, was due to an atypical rainfall event and left 3 people dead and 26,000 evacuated. These two disasters caused millions of pesos worth of damages and losses.

Resultantly, the city began a process of mainstreaming risk management as a state policy as a response to the political and social demands that followed the disaster. The catastrophe derived from the flood formed bonds of solidarity between people (Fontana, 2009) and favored the emergence of groups that sought to strengthen the memory of what happened (Ullberg, 2013). All of which favored the scenario for a legitimate social and political claim before the government.

That is why the decision of mainstream DRR as a state policy was the key to the success of all the achievements made by the City of Santa Fe regarding DRR. It allowed the facilitation of the process of mainstreaming DRR to all areas inside Municipality and the continuity of the DRR policies through changes in the City administration due to electoral processes.

In order to make this decision effective, the local government created the DRR³ Municipal System in 2008⁴. Likewise, this Ordinance creates the Risk Management Department, which is responsible for carrying out, together with public institutions and other sectors, policies, and actions aimed at risk management in general. This Directorate has a secretarial level within the structure, that is, it responds directly to the Mayor of the city. This hierarchy facilitated the coordination between areas and joint work.

²These unofficial statistics arise from a complaint made by the House of Human Rights arguing that they were deaths because of the physical and psychological consequences suffered by the flood. In this regard, there are controversies to date because other civil society organizations claim that deaths from sequelae amount to 158 people. Sources consulted (September 2017): <http://www.infovera.com.ar/2012/04/a-9-anos-de-la-inundacion-sigue-vivo-el-reclamo-de-justicia> <https://www.pagina12.com.ar/diario/elpais/1-34683-2004-04-28.html> <http://www.ellitoral.com/index.php/diarios/2013/04/29/metropolitanas/AREA-09.html>

³ Disaster Risk Reduction

⁴ Ordinance n° 11.512. Accessed July 17, 2017. <http://www.santafeciudad.gov.ar/gobierno/normativa.html>

The process of mainstreaming DRR was carried out both through legal institutionalization and modifications to the organic structure of the municipality. In addition, awareness and training activities were conducted with the municipal authorities on the subject.

In this process, the Risk Communication Programme was created in 2007 and depends on the Communication Department and the Risk Management Department of the City of Santa Fe.

Through the program, different strategies and actions have been carried out with the participation of teachers and students, neighborhood organizations and the Red Cross, among others. Most of these actions have been aimed at increasing the knowledge and understanding of flood risk in the city, thereby augmenting the capacity of each sector in front of them.

In summary, the city of Santa Fe understood that, to move towards successful disaster risk management in the city, it was necessary to mainstream this approach within the municipality's organizational structure, incorporating all the areas and actors that make up the local public management. In this way, the actions that were carried out, both normative and programmatic, have been guided by this aim.

The city's risk communication program is an example of this desire to mainstream risk management, and its functions reflect a broad understanding of what it is to communicate, given that not only is it intended to generate and disseminate information about risk, but also to create consciousness and capacity in the face of it.

Background and justification

Santa Fe has been chosen as a case study for several reasons, in what has proven to be a successful example of disaster risk management at the local level. The city won several international awards that certify this, including: first city of Argentina to join the global campaign "Developing resilient cities. My city is preparing " from the UN-ISDR where it has been awarded the prize as "Model City "and as "Mayor Champion" of the 2010-2015 World Campaign; Sasakawa prize awarded by the United Nations for outstanding work in risk communication (2011); winner in the call to be a member of the Rockefeller Foundation's 100 Resilient Cities Network and is a member of the Regional Thematic Platform on Urban Risk of the UN-ISDR⁵.

⁵ "Desarrollando ciudades resilientes - Avances de la ciudad de Santa Fe en los aspectos esenciales propuestos por la Campaña". Department of risk management – Santa Fe government. Accessed July 17, 2017. <http://santafeciudad.gov.ar/blogs/gestionderiesgos/wp-content/uploads/2013/07/SantaFe-Aspectos-esenciales.pdf>

In this paper, risk communication is defined based on the concept of political communication as the interaction of discourses between the three main actors which are the governments, the media and the society in general (Wolton,1995) (Fontana & Maurizi, 2014).

Studies on risk communication are very recent and their development lacks a general theory in which they can be framed. However, there are academic texts that summarize the main aspects about risk communication and its origins, such as: Covello et. Al (1989), Lundgren y Mc Makin (1998) and Sheppard et al (2012). Many of which are taken as reference to analyze the case of study presented on this paper.

In summary, it's difficult to set a date of origin for risk communication. Some authors placed it in the '50s with the first prevention campaigns made by some governmental agencies in the United States about atomic energy and other issues (Kasperson and Stallen, 1991). Therefore, other authors as Plough and Krinsky (1987) consider that risk communication was dedicated answer to governmental needs at the beginning.

In the '70s the psychometric approaches on risk communication were developed by Slovic, Fischhoff and other authors. These studies were and are still relevant in the academic field of risk perception and risk communication strategies. But in the '90s Mary Douglas (1996) published her work about risk perception as a social construction and a whole new field of studies started to take force on this matter.

Later, in 1989 the National Research Council gave the first and most accepted definition of risk communication as the "interactive process of exchange of information and opinion among individuals, groups and institutions. This includes multiple messages about the nature of the risks and others that do not directly address the risk, but express concern, opinion or reaction to the contents about the risks or the legal and institutional arrangements of risk management ". (49)

This definition places the greatest emphasis on the interaction and cooperation of the intervening actors, generating social and collective capacities to face the danger and reduce the vulnerabilities. Based on that the communication must consider the problems in the understanding of the messages given that there is different disposition and capacity among those who receive them, therefore, different types of understanding of these (NRC, 1989: 26-29).

So, in this paper the case of study is analyzed based on a combination of approaches: the risk communication definitions and the political communication framework. As it will be conceived in this work, risk communication includes communication policies throughout all the moments of the disaster cycle. Starting from

the assumption that risks are socially constructed, risk communication is studied as the construction of a discursive framework in which diverse political and social actors interact:

“(…) communication and communication management are central to improve or worsen the perception of danger, the type of reactions of those involved and the scenarios for a future consensus about what is negligent and what is responsible”. (Elizalde, 2005: 160)

Fig.2 shows the match between these main actors and the institutions that participated in the planning, management and implementation process of risk communication in Santa Fe.

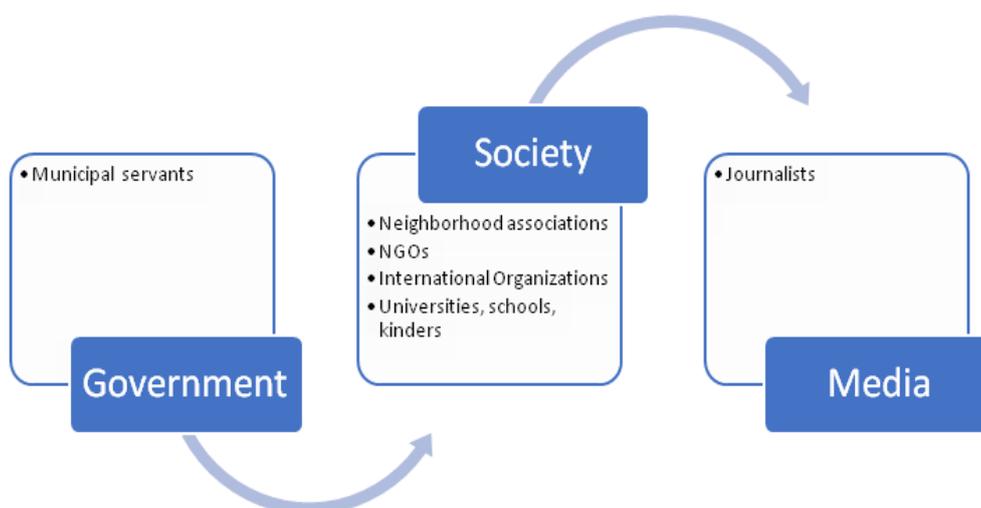


Fig. 2: Main actors in political communication and institutions involved in risk communication process in Santa Fe. Source: self – authoring

The initial premise is that to improve risk perception, it is first necessary to increase its comprehension and the knowledge that people have about it. Risk communication allows to do this.

Methodology

This study used qualitative research techniques, including Programme analysis, documentary review and interviews with stakeholders involved in the process. All these materials were analyzed following content analysis framework using the software for qualitative analysis called “Atlas.ti”⁶. The legal framework documents of the city

⁶ <https://atlasti.com/>

regulations, the risk communication documents produced by the Santa Fe government⁷, information gathered from field work in Santa Fe and interviews with stakeholders were compiled in a hermeneutical unit in the software.

The period of the analysis was between the years 2008 and 2015, because it matches with the creation of the DRR Municipal System.

For the content analysis some theoretical and empirical categories were defined. Based on these categories, all the documents compiled in the hermeneutical unit were codified and analyzed to search for significant meanings and relationships between them. Finally, an analysis of the meaningful categories was done, and a series of networks were drawn to visualize them.

Risk communication strategies in Santa Fe city

To conduct effective risk communication, it is necessary to begin by knowing the pre-existing risk perceptions of the society. Then the communication is planned based on these perceptions and the strategies must be put into action. This way it is possible to manage and implement them as shown in Fig.3 next page:

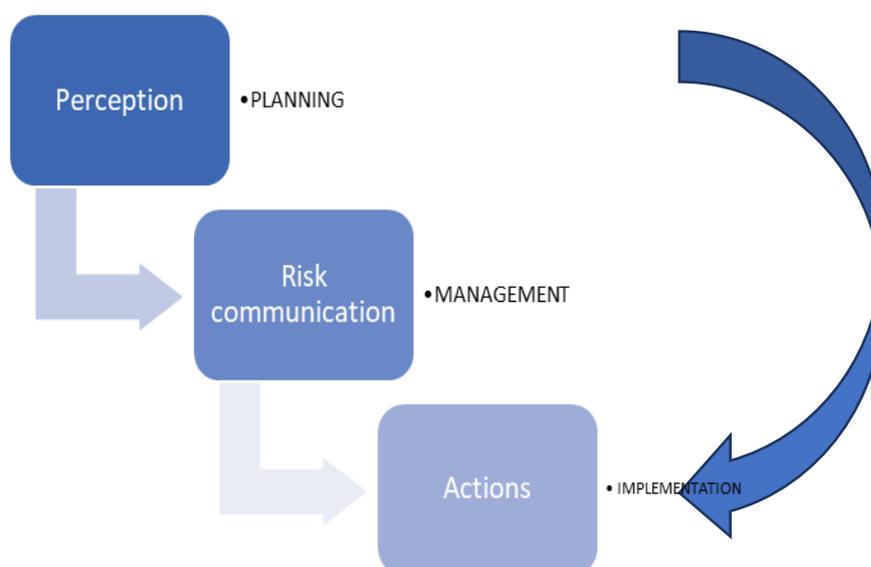


Fig. 3: Risk communication flow. Source: self – authoring

⁷ These documents are: DRR contingency and preparedness plans, brochures and flyers, guides and briefs done by Santa Fe's government. Accessed July 17, 2017. <http://santafeciudad.gov.ar/blogs/GdR/la-gestion/material-para-descargar-2/>

Following the scheme in Fig.3 this paper analyzed risk communication planning, management and implementation in Santa Fe.

1) Risk analysis assessments and institutional risk perception in Santa Fe

To understand the institutional risk perception in Santa Fe, the identification of the hazards and vulnerabilities was conducted⁸. The institutional risk perception refers to how the government of Santa Fe City conceptualized risks which affect the city. This perception was built over the years not only by the authorities but also by the main stakeholders involved in all the policies and strategies implemented on DRR in the City.

To get to know that perception an analysis of how the hazards and vulnerabilities were conceptualized and exemplified in the risk communication materials elaborated by the municipality was done as it was formerly explained using content analysis techniques.

The two main hazards identified are heavy rains and river floods; the most important are floods. Therefore, all the risk communication materials elaborated by the government respond to these hydrometeorological phenomena. In table 1, the elements that have been identified in the content analysis of the communication materials prepared by the municipality are detailed.

Table 1: Elements of risk identified in the risk communication materials analyzed. Source: self-authoring⁹

Hazards	Vulnerabilities	Risk
<i>Heavy rains</i>	Concentration of garbage in the streets	<i>floods</i>
	Bad territorial planning	
	Housing in high risk areas	
	Poverty and other weaknesses of the communities	
	The lifestyle of the communities	
	Incomplete flooding defense system	

⁸ The definitions of hazards and vulnerabilities that had been follow are in the UNISDR Glosary. UNISDR. Accessed July 17, 2017. <http://www.eird.org/fulltext/ABCDesastres/glosario/inicio.htm>

⁹ Most of the hazards and vulnerabilities are defined in the document produced by Santa Fe city and UNISDR "Aprender de los desastres". 2014. Accessed July 17, 2017. http://santafeciudad.gov.ar/blogs/GdR/wp-content/uploads/2017/09/aprender-de-los-desastres_web.pdf

<i>Floods of river</i>	Lack of an early warning system for hydrometeorological phenomena	
<i>Salado and</i>	and a contingency plan	
<i>Paraná river</i>		

In addition, in one of the most important materials elaborated by the City the authority refers to the risks and DRR as the following way:

“The vital importance of the system of defenses and drainage highlights the need for the entire society to become aware of the fragility of the territory and adopt patterns of coexistence that allow these artificial systems to always be in optimum working order - to avoid garbage in drains, Do not remove soil from the defenses, do not vandalize the pumping systems - as well as be prepared to face an eventual danger situation, that is, organize in coordination, know what to do and how to do it, anticipate the different resources that are required. The elaboration of contingency plans and their appropriation by the citizens are an essential part of this preparation.” (Government of the city of Santa Fe -UN-ISDR, 2014: 21)

This quote expresses the vision of the City understanding risk as a social construction, reason why it was very important for the DRR Municipal System to mainstream DRR in different areas and improve risk communication.

Besides the definition of the components of risk, risk communication in Santa Fe incorporated the perceptions of society based on the historical relationship between the river and the city. The central element of this relationship is water. So, water, in this context, has a social value which is necessary to define perception of floods, as can be visualized in Fig.4.

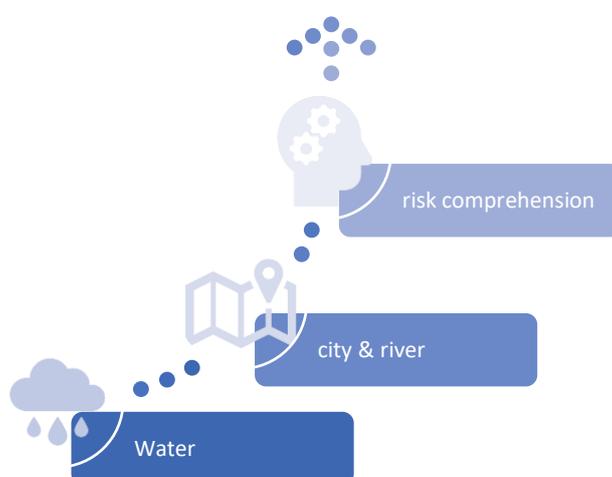


Fig.4: Central elements of risk comprehension in Santa Fe. Source: self – authoring

Water is one of the central elements in the construction of the identity of the city and of the understanding of risk. It is positioned on water, personified in the river, as a fundamental element in the understanding of the city-river relationship.

This relationship is part of the main content of the risk communication planned and implemented by the city government where "preparation" appears as one of the categories associated with water. This is because, in the documents analyzed, the risk communication materials refer to preparatory measures for floods.

In summary, the analysis concludes that the understanding of risk is sought through the awareness of the city-river relationship. It is from this understanding of risk that preparatory measures are communicated to make the population and the city more resilient to flood disasters.

The perception of risk used by the government of Santa Fe in their communication materials seeks to involve perspectives of diverse actors, coming from different sectors and social roles. It defines flood risk, detailing vulnerability conditions not only from a geographic or territorial perspective, but also social and political through the memory of the disaster associated with the historical construction of risk in the city-river relationship.

It starts with the premise of assuming government responsibility for risk and sharing it with the rest of the actors, through clear assignment of responsibilities. It seeks to increase the understanding and knowledge of flood risk through content that corresponds to the preparation stage, combining it with other preventative strategies such as working with schools. It tries to reestablish the bond of trust between government institutions and society.

2) Risk communication strategies and the approaches behind

The approaches from which risk communication is planned according to the analysis conducted are:

a) Sustainable development: a concept strongly related to resilience and governance, therefore a useful frame through which to view risk communication. The outline of work on disaster risk management from the government of Santa Fe has tried to encourage dialogue and the participation of citizens in activities aimed at increasing knowledge about risks.

b) Governance: most of the actions implemented from the municipality consider the participation of multiple sectors and seek coordination among them. A consensus search was also carried out for the construction of the Contingency Plan that integrates the opinion of the affected populations.

Despite these efforts, other sectors did not participate in the construction of communication materials. These were made by the city government. Therefore, two levels of participation must be noted: one in relation to the activities defined to increase the capacities and the knowledge against risk; and another, in relation to the incorporation of the perspectives of the actors involved in the construction of risk in the elaborated communication materials.

At the first level, the materials encourage viewing people as part of the solution. At this level, many stakeholders are involved; organized civil society, universities and schools, multilateral organizations and international organizations, other levels of government and the media. It is a combination of dialogue between policy makers, experts and non-experts regarding risk and risk communication. This was the case of the Contingences Plans that considered the risk perception of neighbors, the activities implemented with the programme “classroom-city” where teachers and students learned about risk together based on their own perceptions. And finally, another example of this kind of participation was the initiative of elaborate a thesis library with all the researches done about the City and DRR.

At the second level, the participation that is encouraged is to be recipients of the messages with few channels to provide feedback or dialogue about the understanding of the risk that is communicated. The definition of the messages was made by the policy makers and the experts, while the rest of the actors were recipients of the messages. However, this does not mean that the quality of the elaborated materials is bad or that their content is incorrect. In this case of study, the pieces of communication elaborated only by the government with assistant of the technical actors were guides and manuals about DRR, supplements of public magazines of free distribution in the City and some other documents about all the DRR policies made in the period of analysis.

The lack of involvement of stakeholders in the elaboration of communication materials could be a common mistake and sometimes, this is the reason why people don't feel identified with the content or risk communication is not effective. In order to solve this issue, it is important to make a stakeholder's analysis or map first and invite to participate all those who are relevant regarding the issue from the beginning. To do this, some strategies as institutionalized spaces are important such as working committees where different actors contribute and coordinate the work. Other strategies could be making academic, professional or NGO sector responsible of carried out some parts of the process. This way they would be not only participants but also responsible for achievements and results.

c) Resilience: the risk communication begins with the memory of severe floods in the city. The reflection on the memories and lessons learned are incorporated in the communication materials, mostly when they talk about the relationship between the city and the river as mentioned above.

The efforts made by the city of Santa Fe to communicate risks have been diverse, incorporating different strategies. Within the strategies, training activities such as workshops, courses, talks and conferences are identified; field work that consisted of the collection of information in vulnerable areas, talking to neighbors, distribution of information; linkage with actors through agreements with the media and institutions to serve as temporary shelters; dissemination of information in radio and television campaigns; as well as finally the institutionalization of actions taken in the elaboration of contingency manuals and protocols.

According to the contents of the risk communication materials elaborated by the government of the city of Santa Fe, it is possible to identify two specific objectives:

- a) increase understanding about the risks in the city
- b) strengthen preparedness capabilities against these risks.

In general, the risk communication of the city follows the communication for care approach whereby the communication is about a risk that is well-perceived among the population and based on this, many of the graphic materials include content related to the preparation for this risk.

Also, all the materials analyzed follow the same style in terms of graphic design and content organization. This shows that communication planning exists, and the guidelines of that planning have been defined, understanding it as a process. Moreover, this shows that there is continuity in the communication policy, not only sustained by its institutional place but by the political will of those who are in local government, beyond the management changes.

Another relevant aspect is that most of the information generated is free and publicly available. It has been distributed through various channels, not solely through traditional means of communication such as radio or television, but also through a blog, a website, YouTube and the city's Facebook account. Likewise, opportunities for face-to-face communication were created and coordinated, with a participatory approach, where activities to improve risk understanding were carried out. One of these was the initiative of work with neighbors coordinated by the local authorities of the neighborhood centers in which the citizens analyzed the risk in their own blocks and houses. All this information was added on the Contingences Plans made for every region of the City.

Following these approaches and objectives, three strategies for risk communication are identified. These strategies were classified based on their goals:

a) Communication management strategies: for the city of Santa Fe, disaster risk management is considered a state policy. Consequently, the city has endeavored to make risk communication mainstream. The Risk Communication Program was created within the Risk Management Department of the municipality for this purpose. This program has a coordinator, but it depends on the Communication Department of the Municipality. This secretariat has been in close liaison with the Risk Management Division (DGR) and the communication actions have been planned.

Planning has allowed all identified strategies to be interrelated. The training generates awareness of the risk that is reinforced by dissemination actions. These actions make it necessary to evaluate what has been generated and, therefore, to modify the planning to make the process more dynamic. The revisions made to the materials produced and the changes in the dissemination process are an example of this dynamism.

b) Information dissemination strategies: these seek to deliver information about risk and the actions that have been pursued for risk management. They seek an increase in capacity through the availability of information. This is a series of publications that are disseminated among the population and have mainly been generated by the local government, within the framework of its Risk Communication Program. Another action within the dissemination strategy has been the creation of the Blog on DRR associated with the city's web page, where all the elaborated communication materials are available.

c) Disaster risk awareness strategies: these are focused on increasing risk perception through the understanding of its components; hazards and vulnerabilities. These consist of training workshops given to municipal servants and to different actors that make up the municipal DRR system, such as neighbors, organizations, teachers, students, journalists and the public. Cultural and artistic intervention are another type of action that has manifested. These have been carried out not only in commemoration of the 10 years of the flood but also for keeping the memory of the flood alive. Finally, the work in schools with the "classroom-city" project constitutes the most complete awareness-raising action, bringing the governmental, school, family and students' sectors together with historical risk understanding activities. In addition, it combines work in the classroom with field activities so that students, teachers and parents who participate see the risk in the city firsthand.

In Fig.5 the process of risk communication in Santa Fe, described in subtitles 1 and 2, is summarized. The process began with the memory of disaster and the historical construction of risk assessments. Then the category

“water” was determined as the main axis for defined risk communication and it was planned using the approaches of sustainable development, governance and resilience. After that, two strategies were defined, implemented and managed by the municipal government with the participation of other stakeholders.

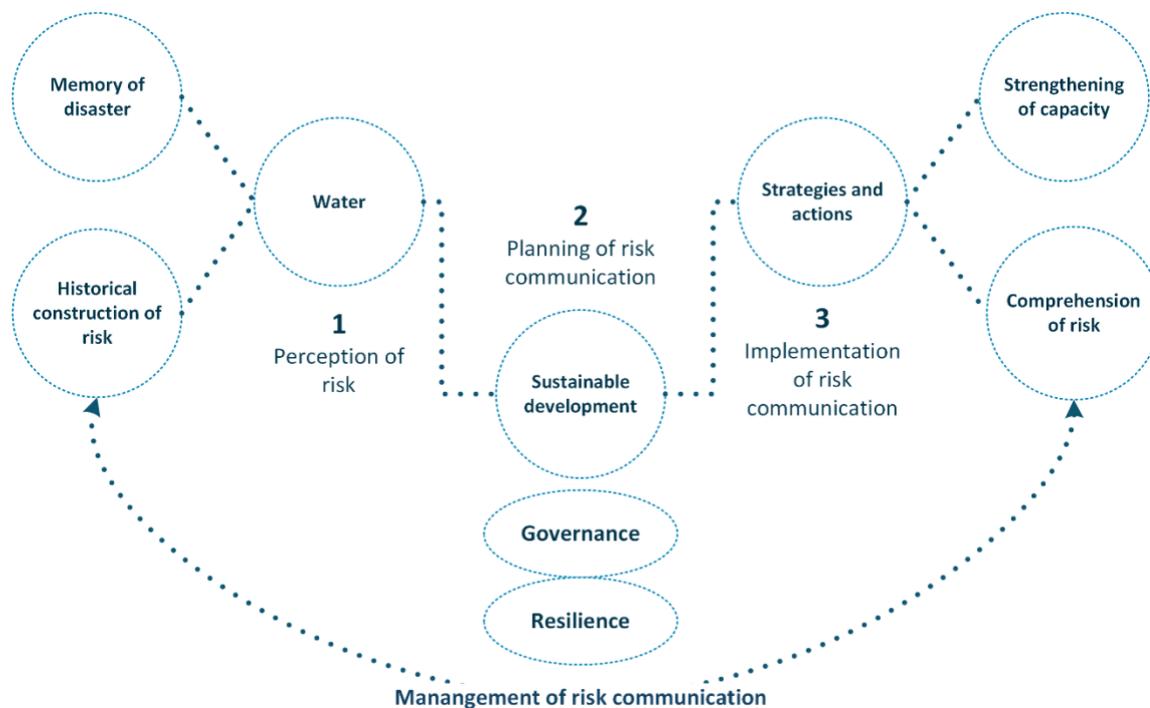


Fig. 5: The process of risk communication in Santa Fe city. Source: self-authoring

3) The risk communication policies

The Risk Communication Program of the city of Santa Fe was created in 2007 and depends on the city's Communication Department and Risk Management Department. The program has been prominent within the risk management of the city and it was awarded with the Sasakawa prize of United Nations in its Global Platform on Risk Reduction in 2011. Most of the actions taken by the Program have been aimed at increasing the knowledge and understanding of flood risk in the city.

The mission of the program is broad and aims to generate more information and awareness about the risks in the population. The activities carried out were varied in nature, corresponding to the proposed functions of the program. It has worked together with approximately 60 organizations, 45 of which are neighborhoods, as reported in the 2014 document "Learning from disasters".

In table 2, the goals expressed in the Risk Communication Program document are analyzed through the actions implemented.

Table 2: Match between expressed goals of the Communication Programme and the actions implemented by the government. Source: self - authoring

Goals expressed	Actions done
<p>Promote participatory activities aimed at different sectors of the population to carry out collective analyses of the causes and consequences associated with the different risks existing in the city</p>	<ul style="list-style-type: none"> ▪ Institutional strengthening workshops for risk management ▪ Participatory realization of school plans in case of emergencies together with the Argentine Red Cross, Santa Fe branch
<p>Guide actions aimed at raising awareness in society to improve perception of risks, recognizing weaknesses and strengths in relation to threats, and undertaking new activities to allow communities to reduce their own vulnerabilities to face and overcome potentially dangerous events.</p>	<ul style="list-style-type: none"> ▪ Talks aimed at those in charge of the distribution of dissemination materials indicating a possible evacuation: ▪ Training delegates of neighborhoods about the contingency plans. ▪ Training course for teachers and community leaders "Santa Fe and the floods. Towards risk management " ▪ Training for people responsible for shelters and their assistants ▪ Organization of talks with media executives, journalists and communicators ▪ Creation of a blog about DRR¹⁰
<p>Promote information campaigns, education and awareness of the population about the different risks to which they are exposed, in order to provide</p>	<ul style="list-style-type: none"> ▪ Radio and television spots with recommendations and indications for rains

¹⁰ Blog of Santa Fe City. Accessed July 17, 2017. <http://santafeciudad.gov.ar/blogs/gdr/>

<p>fundamental elements for the decision making of individuals, families or institutions</p>	<p>and to raise awareness about the handling of household waste.</p> <ul style="list-style-type: none"> ▪ Preparation of dissemination materials to inform the population of the indications and recommendations necessary to evacuate each affected area
<p>Facilitate the implementation of activities aimed at different sectors of the community so that they may recognize and make their possible contributions to risk reduction.</p>	<ul style="list-style-type: none"> ▪ Creation and start-up of the "classroom-city" programme: through this programme we worked with more than 100 schools. ▪ Preparation and implementation of the project "Preparing from schools: more prevention and less risk ▪ Thesis registration and final works about the city of Santa Fe
<p>Strengthen the preparation of citizenship through the exchange and dissemination of salient, concrete and concise information to use in case of emergencies, including basic agreements for better organization of the response of the entire community</p>	<ul style="list-style-type: none"> ▪ Work with different organizations to identify safe evacuation routes from the most vulnerable areas of the city ▪ Communication of the progress made in preparation and response ▪ Elaboration and mass dissemination of specific material about flood preparedness and response measures
<p>Develop risk communication strategies based on the actions of the local risk management system, including the preparation of emergency plans and contingencies</p>	<ul style="list-style-type: none"> ▪ Preparation of the Contingency Plan for rain. ▪ Elaboration of the Procedures Manual of the municipality in case of disasters

Most of these actions were carried out in liaison with other institutions and organizations; (among others) the Santa Fe branch of the Argentine Red Cross, the Canoa Civil Association, Caritas, White Helmets, the University of the Littoral.

4) Strategies align with the Sendai Framework for Disaster Risk Reduction 2015–2030

The communication risk strategies and actions planned and implemented by Santa Fe align with priorities 1 and 2 of the Sendai Framework¹¹ which aims to understand risk and strengthen disaster risk governance. In this last priority, the case study of Santa Fe has more lessons to give other cities that wish to elaborate and implement effective risk communication to build capacity.

The strategies and actions to communicate risk in Santa Fe also contribute to heightened capacity for flood preparedness and give citizens power to hold government actions on DRR in general to account.

Nowadays, it is widely recognized that perception and risk assessment are the first steps in DRR. Both disaster risk management and communication rely on the information available about risks. It is a necessary condition to get people to participate in the public decision-making process.

Lastly, it is relevant to include societal risk perception in DRR management and communication to progress toward greater resilience. The process followed in Santa Fe shows this begins with perception and risk analysis assessments, identifying the main issues to communicate based on the memories of disasters and the historical construction of risk as showed in Fig. 4. Understanding risk is possible in Santa Fe because of all the efforts made by the stakeholders to improve it through risk communication.

Conclusions

The study analyzed risk communication strategies that had been implemented at the local level in Santa Fe city, Argentina. Describing the methodology phases for the implementation of those strategies and the process of work done with the participation of stakeholders.

¹¹ UNISDR, 2015. Document of Sendai Framework: <https://www.unisdr.org/we/coordinate/sendai-framework>

In summary, to implement an effective risk communication strategy at the local level, it is necessary to assess vulnerabilities from a wide range of perspectives of multiple stakeholders, including policymakers. Considering risk communication as a public policy itself, regarding political communication framework. In addition, it is necessary to plan risk communication strategies to build consensus in the public debate. This way increases confidence in local institutions and creates a solid base which allows the government to communicate risks more effectively.

It is also important to consider different channels for communicating risk, such as face to face actions, marketing campaigns, digital and traditional media. These actions should include multiple stakeholders to promote risk governance.

Finally, the analysis showed that it is effective to implement strategies that aim to create a broad understanding about the risk; starting from the population's general sense of the causes of these risks.

This case study teaches that risk communication can be a democratizing tool since it enables people living in a territory to make decisions about the management of the risks by which they are affected. Therefore, risk communication cannot be reduced to information about a threat or vulnerability. Information is a prerequisite for participation and political construction in a given environment, but this alone is not enough.

An understanding of the public perception of risks is needed, for this the debate between the actors involved in the definition of the matter is essential. This is the way in which Santa Fe has built its risk communication process.

References

“Ordinance 11.512 DRR Municipal System”. Santa Fe government. Accessed August 15, 2018.

<http://www.santafeciudad.gov.ar/gobierno/normativa/ordenanza/1260.html>

Covello, V., Mc Callum, D., and Pavlova, M. 1989. Effective risk communication. The role and the responsibility of government and non-government organizations. *New York: Plenum Press.*

Douglas, M. 1996. La aceptabilidad del riesgo según las ciencias sociales. Editorial Paidós Studio. España.

Elizalde, L. H. 2009. Gestión de la comunicación pública. Empresas, grupos e instituciones en el espacio público. Barcelona. Editorial Bosch.

Fontana, S. 2009. Sobre llovido, mojado. Riesgo, catástrofe y solidaridad. El caso Santa Fe. Córdoba. EDUCC.

Fontana, S. E., and Maurizi, V. F. 2014. Comunicando el riesgo. Estrategias comunicativas frente al riesgo de desastres. Buenos Aires. Biblos.

Lundgren, R. and Mc Makin, A. 1998. Risk Communication: A Handbook for Communicating Environmental, Safety, and Health Risks. *Batelle Press*

National Research Council. 1989. Improving Risk Communication. Washington, DC: The National Academies Press. <https://doi.org/10.17226/1189>.

Plough, A. and Krimsky S. 1987. The emergence of risk communication studies: social and political context. Massachusetts Institute of Technology and the President and Fellows of Harvard College. *Science, Technology and human values*. Vol. 12, Issues 3 & 4, pp. 4-10.

Sheppard, B., Janoske M. and Liu B. 2012. Understanding risk communication theory: a guide for emergency managers and communicators. Report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security. College Park, MD: START.

Ullberg, S. 2013. Watermarks. Urban Flooding and Memoryscape in Argentina. Stockholm University

Wolton, D. 1990. Political Communication: The construction of a Model. *European Journal of Communication*. Vol. 5: 9-28. London, England. SAGE