Deliverable 7.6.2b

Communication plans for multi-hazard risks: An analysis of Civil Protection plans

Document versions:

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1. Introduction

This report presents the results of the actions carried out between October 2023 and March 2024 to implement task 6.2. The task focuses on effective strategies and tools for risk communication. During this phase, the research reviewed existing risk communication tools, campaigns, and experiences, emphasizing public risk communication.

The focus of the study was primarily on public and institutional actors, who were investigated as both producers of risk communication and stakeholders of the project's subsequent actions. This study examined public actors as producers of risk communication.

The involvement of public institutions in risk communication management is visible mainly during emergency phases, which correspond to sudden or impetuous risk occurrences. However, it also encompasses several other steps, including planning (Comunello, 2014). These processes involve defining relations between institutions, identifying ad hoc communication channels within the media mix, and providing constant training to the communication team responsible for managing risks and emergencies. Strategic plans within different organizations become relevant in connecting competencies, response times, and organizational practices (Lovari & Ducci, 2022).

It is assumed that public organizations engaged in risk and emergency communication have developed procedural standards over time. These standards can be found in consultation documents, such as *guidelines* or *risk communication plans*.

The previous task (6.1, see Deliverable 6.1.1. "Identifying Best Practices in Risk Communication: A State-of-the-Art Review of International Literature") analyzed international literature to outline how organizational aspects can be levers of strength or inhibiting factors for risk communication. Effective risk communication requires well-oiled organizational mechanisms, flexible and specialized communication staff, standardization of practices, and normalization of inter-institutional dialogue (Fu & Lai, 2021; Graham et al., 2022; Ozanne et al., 2020). On the other hand, if there are no clear and objective communication procedures in place, and if the staff lacks the necessary resources and expertise to manage communication effectively, then it becomes difficult to promote clear, structured, and persistent risk communication initiatives (Bostrom et al., 2018; Intrieri et al., 2020; Shrestha et al., 2021; Tagliacozzo & Magni, 2018).

The action/research described in this deliverable aims to determine how organizational routines and practices are transformed into standardized and accessible practices for stakeholders and citizens.

Accessible plans or documents on risk communication can be seen as a sign of maturity of public organizations in managing and organizing communication processes. Moreover, these tools can serve a dual purpose. Firstly, they are valuable resources for learning and sharing relevant practices. Secondly, they are information tools for the public and stakeholders to consult in risk communication. For instance, these documents can aid in identifying sources, official channels, and timing of risk communication. The study examined these processes and their products using a multilevel approach based on size and geographic scope.

The study primarily focused on guidelines produced by international organizations involved in preventing and managing natural hazards. The objective was to examine how these organizations translate their experience in communication into operational terms, including relevant practices and prescriptive

actions for regulating communication activities. Secondly, a structured content analysis was conducted to investigate the Civil Protection plans of Italian regions and municipalities. The aim was to assess the current state of risk communication tools and institutional involvement while ensuring the tools' public explanation, visibility, and searchability are considered. The requirement for municipalities to develop a civil protection plan is mandated by Law No. 100 of 2012, a mandate that is further underscored by the Civil Protection Code in Legislative Decree No. 1 of 2018, necessitating approval via a council resolution. According to the Presidency of the Council of Ministries' directive dated April 30, 2021, each municipal entity is then obligated to follow the prescribed guidelines for formulating Civil Protection plans, as detailed in the associated technical annex, when preparing the document.

The two actions are in dialogue because the content analysis was guided by the recurring elements identified from the guidelines. It is impossible to fully identify adherence to the prescriptive dimension of the guidelines by Civil Protection plans, as they also depend on the Italian regulatory complex. However, it can be verified how the relevant elements extracted from reading the guidelines can be found in the stabilized practices adopted by Italian institutions.

1.1. Deliverable organization

This deliverable is divided into two interconnected sections but can be read independently.

The first section provides an analysis, which can also serve as a benchmark, of the main guidelines published by leading agencies that promote information on risk and its management. These guidelines are publicly accessible since they are available online (Deliverable 6.2.a "Identifying best practices in risk communication: Guidelines benchmarking").

The second section analyzes the risk section of the Civil Protection plans produced at the regional and municipal levels to investigate the status of codified risk and emergency communication practices.

The two research phases were designed to be connected and carried out in succession, using suggestions from international experiences to guide the reading of the Italian situation.

1.2. Relevance of the action for the next steps of the project

The purpose of this action research is to aid in implementing the following tasks outlined by the project: designing and testing a communication campaign, evaluating the campaign, and drafting subsequent guidelines.

The results presented in this deliverable clarify the following cognitive nodes, which will be helpful in the project's next steps:

- This text presents an inventory of effective practices surveyed by international organizations;
- It identifies the visibility of existing and codified risk communication practices;
- It identifies the searchability and visibility of Civil Protection plans by adopting a citizen-centered perspective;
- It identifies the tools available to the various local entities engaged in risk communication, as depicted by administrations.

2. Executive summary

- Communication plans are essential in coordinating risk communication. They provide valuable standard procedures to organize and coordinate communication efforts. Moreover, they suggest the value and centrality of communication planning in public administrations, underlining its strategic role.
- We performed citizen-centered research to identify risk communication plans published by the Italian public administrations. Standard search engines (Google) have been queried to identify natural and environmental risk communication plans. This research showed no significant results.
- We decided to analyze the communicative dimension in Civil Protection plans. Civil Protection plans have been retrieved by combining different approaches, such as Google searches and email queries to public administrations.
- The identified research units are Italian regions, Italian regional capitals, and Italian municipalities presenting at least an area in their territory at high hydrogeological risk, as classified by the ISTAT Atlas of Municipalities. The final pool of investigated Civil Protection plans comprises two regions, 19 regional capitals, and 20 municipalities presenting at least an area in their territory at high hydrogeological risk.
- Civil protection plans have been analyzed using a guideline based on the main results from the international risk communication guidelines study (Deliverable 6.2.a) and the literature review performed in Deliverable 6.1.
- The results show that Civil Protection plans mainly address emergency communication and adopt an *instructional* risk communication model.
- Despite presenting multi-risk scenarios and nuanced demographic data, Civil Protection plans do not indicate targeted communication.
- Organizational aspects of communication, including officials and professionals roles, are not fully detailed in Civil Protection plans.
- Social media use is underestimated in the analyzed Civil Protection plans. No information about social media policy, community management, or online sentiment analysis has been identified in the plans.
- The indications on communication published in Civil Protection plans do not fulfill what is usually expected from a communication plan.
- The next project steps should consider these information and communication assets to design effective tools that fit into Italian administrations' routines and practices, as formalized by Civil Protection plans.

3. Analysis of Risk Communication Plans in Italy

In this section, we will present the results of an analysis examining the presence and content of risk communication plans in the Italian context.

Adopting a citizen-centered perspective, we will summarize the emerging results from the research on risk communication plans. The primary goal is to assess the visibility and clarity of documents intended for preparation and socialization regarding risk communication as interested citizens perceive. Risk communication plans ought to outline essential components including content, sources, the timeline for distributing messages, methods of communication, intended audiences, and precise goals. International organizations committed in managing risks communication details similar aspect in their guidelines.

This examination revealed no documents that can be considered similar to risk communication plans within the Italian web. Consequently, we have decided to investigate more deeply the presence and details related to the communication of Civil Protection plans.

We focused on the documents from a study on guidelines published by the leading international agencies regarding risk communication (Deliverable 6.2.a "Identifying best practices in risk communication: Guidelines benchmarking"). The analysis concentrated on investigating how such documents include, among other things:

- Details on the organization and planning of communication processes;
- Operational indications regarding message models and their templates;
- Consideration of sensitive and current aspects concerning the complex media environment, such as misinformation, communication of uncertainty, and the public's emotional responsiveness.

Furthermore, our analysis considered the citizens' perspective in searching for and using the documents' contents, considering the specialized and technical language used.

These themes will be further elaborated on in the subsequent sections of the deliverable.

4. Communication Plans Research: A Citizen-Centered Analysis

Task 6.2 (*Risk communication tools and strategies design*) included a detailed analysis of risk communication plans developed by Italian agencies and institutions. This investigation has several objectives. Firstly, it allows the creation of a repository of methods and tools already used within public administrations. Secondly, by comparing these documents, it is possible to identify areas for improvement and reinforce existing practices. Thirdly, understanding the current landscape of risk communication adopted by public administrations can inform the development of new communicative tools, such as campaigns. These tools require, among other things, a clear definition of the communication channels used, the entities responsible for their dissemination, and their integration into a coherent plan and editorial calendar.

For citizens, understanding how institutions communicate is equally crucial. Trust in sources is essential to ensure that information is perceived as credible and authoritative (see Renn & Levine, 1991; Peters et al., 1997; Paton, 2008; Chryssochoidis et al., 2009). During an emergency, knowing who will provide the necessary information and through which channels it will be conveyed is a critical factor in reducing

panic and uncertainty (Mileti & Sorensen, 1990; Palttala et al., 2012). This knowledge also serves as a strong deterrent against misinformation, which can arise from the uncontrolled circulation of news by unauthorized sources through unofficial channels (Lovari & Bowen, 2020).

The Importance of Publicizing Communication Strategies. We hypothesized that publicizing communication strategies could help people become familiar with the procedures to follow in case of emergencies, thereby contributing to risk reduction and prevention (Frewer, 2003; Menon et al., 2005; Dayrit et al., 2020; Fakhruddin et al., 2020). Transparency in practices and procedures is also a hallmark of the *quality of communication* by public institutions (Ducci, 2015; Canel & Luoma-aho, 2018), promoting responsible accountability processes.

Therefore, we adopted a citizen-centered approach to assess how easily communication plans of various Italian institutions can be found online. This led to a non-specialist web search. Using the Google search engine, we entered generic keywords to investigate the availability and traceability of risk communication plans on the web. To maintain objectivity, we avoided specific terms and adjectives and did not search for normative documents or documents already known by title.

Moreover, to ensure a broad research approach and avoid biases that could stem from prior knowledge of the topic or the researchers' expertise, we accessed documents through Google instead of directly from institutional websites. This avoided an initial selection of sources and circumvented the assumption of pre-existing knowledge of the entities responsible for producing risk communication plans, which cannot be taken for granted across the citizenry.

Finally, to mirror an average user's behavior as closely as possible, we decided to limit our search to the results displayed on the first three pages of Google Results [1].

Risk communication plans: a geographic approach. Our investigation was conducted on November 30, 2023, and focused on assessing the availability of risk communication plans throughout Italy, examining regional, provincial, and municipal strategies. Regarding municipalities, we decided to narrow our focus to the regional capitals, considering the study's exploratory nature. We used search terms in Italian, such as "piano di comunicazione del rischio" (risk communication plan), consistent with the type of documents sought and to maintain a perspective centered on the citizen. A geographic specification (*regione*/ region, *province*/province, or *comune*/municipality) has been added. A search without further specification has been launched in a few random control cases.

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[1] User behavior focusing only on the top results of Google's Search Engine Results Pages (SERP) suggests that while people are motivated to search for information, they tend to limit their scrutiny to the first few entries. A high placement in search results is crucial for ensuring the visibility of documents and web pages. Research by web agencies and digital marketing firms has shown that most users do not look beyond the top listings in the SERP. For instance, a study presented by *SearchEngine Journal* found that 25% of users click on the first organic result on Google (source: https://www.searchenginejournal.com/google-first-page-clicks/374516/).

The issue of public organizations' insufficient investments in search engine optimization (SEO) and, more broadly, in digital visibility is complex and extends beyond the scope of this report. However, it is essential to emphasize that targeted investments in this area are crucial to tackling information overload and misinformation, especially during emergencies.

For example, during the COVID-19 emergency, Google and other online platforms collaborated with health authorities to ensure official information was easily accessible, making institutional sites the top results in searches related to the pandemic. For an in-depth analysis of the Italian context, please refer to the study by Lovari and Righetti (2020).

The main results of our research are summarized in Table A. We only identified a few specialized documents, including the seismic risk communication plan developed by the University of L'Aquila, guidelines for managing flood risk specific to the autonomous province of Trento, and a plan for protection against hydrogeological risk produced by the city of Perugia. Beyond these, a few other results presented risk communication plans. Specifically for the municipality of L'Aquila, we found an informative brochure on local risks. Only risk communication plans focused on natural and environmental risks were considered in this search and listed as relevant results. In a few cases, our research identified plans to contrast health risks, such as pandemic and infectious diseases or chemical and industrial risks.

Table A - Risk communication plans: a geographic approach

Region	Geographic focus	Search Date	Keywords	Significant results
ABRUZZO	Abruzzo (region)	30/11/2023	"piano di comunicazione del rischio" + "regione Abruzzo"	NO
ABRUZZO	L'Aquila (generic)	30/11/2023	"piano di comunicazione del rischio" + L'Aquila	Seismic risk communication plan - University of L' Aquila
ABRUZZO	L'Aquila (province)	30/11/2023	"piano di comunicazione del rischio" + "provincia de L'Aquila"	Civil Protection plan - provincial level
ABRUZZO	L'Aquila (municipality)	30/11/2023	"piano di comunicazione del rischio" + "comune de L'Aquila"	Civil Protection plan - municipal level
ABRUZZO	L'Aquila (municipality)	30/11/2023	"piano di comunicazione del rischio" + "comune de L'Aquila"	Informative brochure on natural and environmental risks
BASILICATA	Basilicata (region)	30/11/2023	"piano di comunicazione del rischio" + "Regione Basilicata"	NO
BASILICATA	Potenza (generic)	30/11/2023	"piano di comunicazione del rischio" + Potenza	NO
BASILICATA	Potenza (province)	30/11/2023	"piano di comunicazione del rischio" + "provincia di Potenza"	NO
BASILICATA	Potenza (municipality)	30/11/2023	"piano di comunicazione del rischio" + "comune di Potenza"	Civil Protection plan - municipal level
CALABRIA	Calabria (region)	30/11/2023	"piano di comunicazione del rischio" + "Regione Calabria"	NO
CALABRIA	Catanzaro (generic)	30/11/2023	"Piano di comunicazione del rischio" + Catanzaro	NO
CALABRIA	Catanzaro (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Catanzaro"	NO
CALABRIA	Catanzaro (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Catanzaro"	Emergency plan

CAMPANIA	Campania (region)	30/11/0202	"Piano di comunicazione del rischio" + "Regione Campania"	NO
CAMPANIA	Napoli (generic)	30/11/2023	"Piano di comunicazione del rischio" + Napoli	Civil Protection plan - municipal level
CAMPANIA	Napoli (generic)	30/11/2023	"Piano di comunicazione del rischio" + Napoli	Plan for the Volcanic Risks of the Phlegraean Fields area
CAMPANIA	Napoli (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Napoli"	NO
CAMPANIA	Napoli (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Napoli"	Civil Protection plan - metropolitan city level
EMILIA-ROMAGNA	Emilia Romagna (region)	30/11/2023	"Piano di comunicazione del rischio" + "Regione Emilia Romagna"	NO
EMILIA-ROMAGNA	Bologna (generic)	30/11/2023	"Piano di comunicazione del rischio" + Bologna	NO
EMILIA-ROMAGNA	Bologna (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Bologna"	NO
EMILIA-ROMAGNA	Bologna (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Bologna"	NO
FRIULI-VENEZIA GIULIA	Friuli Venezia Giulia (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione Friuli Venezia Giulia"	NO
FRIULI-VENEZIA GIULIA	Trieste (generic)	30/11/2023	"Piano di comunicazione del rischio" + Trieste	NO
FRIULI-VENEZIA GIULIA	Trieste (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Trieste"	NO
FRIULI-VENEZIA GIULIA	Trieste (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "Comune di Trieste"	Civil Protection plan - municipality level
LAZIO	Lazio (region)	30/11/2023	"Piano di comunicazione del rischio"+"Regione Lazio"	NO
LAZIO	Roma (province)	30/11/2023	"Piano di comunicazione del rischio" + "Provincia di Roma"	NO
LAZIO	Roma (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Roma"	NO
LIGURIA	Liguria (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione Liguria"	NO
LIGURIA	Genova (generic)	30/11/2023	"Piano di comunicazione del rischio" + Genova	NO
LIGURIA	Genova (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Genova"	NO

LIGURIA	Genova (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Genova"	NO
LOMBARDIA	Lombardia (region)	30/11/2023	"Piano di comunicazione del rischio" + "Regione Lombardia"	NO
LOMBARDIA	Milano (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Milano"	NO
LOMBARDIA	Milano (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Milano"	NO
MARCHE	Marche (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione Marche"	NO
MARCHE	Ancona (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Ancona"	NO
MARCHE	Ancona (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Ancona"	NO
MOLISE	Molise (region)	30/11/2023	"Piano di comunicazione del rischio" + "Regione Molise"	NO
MOLISE	Campobasso (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Campobasso"	NO
MOLISE	Campobasso (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Campobasso"	NO
PIEMONTE	Piemonte (region)	30/11/2023	"piano di comunicazione del rischio" + "regione Piemonte"	NO
PIEMONTE	Torino (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Torino"	NO
PIEMONTE	Torino (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Torino"	NO
PUGLIA	Puglia (region)	30/11/2023	"Piano di comunicazione del rischio" + Puglia	NO
PUGLIA	Bari (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Bari"	NO
PUGLIA	Bari (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Bari"	Civil Protection plan - municipality level
SARDEGNA	Sardegna (region)	30/11/2023	"Piano di comunicazione del rischio" + "Regione Sardegna"	Civil Protection plan - regional level
SARDEGNA	Cagliari (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Cagliari"	NO
SARDEGNA	Cagliari (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Cagliari"	Civil Protection plan - municipality level
SICILIA	Sicilia (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione sicilia"	NO [a plan about the pandemic flu risks has been retrieved and not considered in this study]

SICILIA	Palermo (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Palermo"	NO
SICILIA	Palermo (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Palermo"	Civil Protection plan - municipality level
TOSCANA	Toscana (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione Toscana"	NO
TOSCANA	Firenze (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Firenze"	NO
TOSCANA	Firenze (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Firenze"	NO
TRENTINO-ALTO ADIGE	Trentino Alto Adige (region)	30/11/2023	"Piano di comunicazione del rischio" + "Regione Trentino Alto Adige"	NO
TRENTINO-ALTO ADIGE	Trento (province)	30/11/2023	"Piano di comunicazione del rischio" + "Provincia autonoma di Trento"	Guidelines for flood risk communication
TRENTINO-ALTO ADIGE	Trento (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Trento"	Civil Protection Plan - municipal level
UMBRIA	Umbria (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione Umbria"	NO [a plan about the pandemic flu risks has been retrieved and not considered in this study]
UMBRIA	Perugia (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Perugia"	NO
UMBRIA	Perugia (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "città di Perugia"	Hydrogeological Risk Mitigation Plan
VALLE D'AOSTA	Valle d'Aosta (region)	30/11/2023	"Piano di comunicazione del rischio" + "Valle d'Aosta"	NO
VALLE D'AOSTA	Aosta (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Aosta"	NO
VENETO	Veneto (region)	30/11/2023	"Piano di comunicazione del rischio" + "regione Veneto"	NO
VENETO	Venezia (province)	30/11/2023	"Piano di comunicazione del rischio" + "provincia di Venezia"	NO
VENETO	Venezia (municipality)	30/11/2023	"Piano di comunicazione del rischio" + "comune di Venezia"	Civil Protection Plan - municipal level

Risk communication plans: a focus on natural and environmental risks. In our investigation, we specifically examined the impact of research on natural and environmental risks to verify the presence of relevant results. This examination was conducted with a citizen-centered approach to ensure that our investigation reflected the concerns and perspectives of the population. To achieve this, we chose to use broad search terms. These terms were selected based on the search string in Deliverable 6.1.1 "Identifying Best Practices in Risk Communication: A State-of-the-Art Review of International Literature".

The research was conducted in Italian, aiming to capture the broadest possible spectrum of documents related to the Italian territory. The research was conducted between December 7, 2023 and December 11, 2023. The results, although limited, revealed a variety of documents, including guidelines produced by research projects funded at the local or supranational level, project reports, and communication strategies aimed at specific outcomes. These materials, heterogeneous in nature, indicate the wide range of approaches adopted in risk communication. A detailed summary of these findings is presented in Table B.

Table B - Risk communication plans: a focus on natural and environmental risks

Risk	Keywords	Results	Search Date
climate change	"piano di comunicazione" + "cambiamento climatico	Communication plan project Life+ (Emilia Romagna region)	07/12/2023
climate change	"piano di comunicazione" + "cambiamento climatico	Communication plan project Maregot	07/12/2023
climate change	"piano di comunicazione" + "cambiamento climatico	Communication plan project Adapt	07/12/2023
natural disaster	"Piano di comunicazione" + "disastri naturali"	no significant results	07/12/2023
natural risks	"Piano di comunicazione" + "rischi naturali"	Communication plan project Pitem	07/12/2023
natural risks	"Piano di comunicazione" + "rischi naturali"	Communication plan project Rikost	07/12/2023
natural risks	"Piano di comunicazione" + "rischi naturali"	The Italian Ministry of Environment announced a "National Plan of environmental communication and knowledge." However, no document has been found.	07/12/2023
natural hazards	"Piano di comunicazione del rischio" + "minacce naturali"	No significant results	09/12/2023
environmental risks	"piano di comunicazione del rischio" + "rischi ambientali"	Environmental Health Risk Communication Guideline	09/12/2023
rischi ambientali	"piano di comunicazione" + "rischi ambientali"	Guidelines for flood risks communication (Trento province)	09/12/2023
Extreme events	"piano di comunicazione del rischio" + "eventi estremi"	No significant results	9/12/2023
Earthquakes	"piano di comunicazione del rischio" + "terremoto"	No significant results	9/12/2023
Hydrogeological risk	"piano di comunicazione" + "rischio idrogeologico"	Idrogeo platform communication plan (ISPRA)	9/12/2023
Flood	"piano di comunicazione" + "rischio alluvione"	No significant results	9/12/2023

Flood	piano di comunicazione alluvione	Flood Risk Management Plan Public Communication and Participation Process Project of the Po River District Basin Authority	09/12/2023
Inundation	"piano di comunicazione del rischio" + inondazione	No significant results	09/12/2023
Fire	"piano di comunicazione del rischio" + incendio	No significant results	11/12/2023
Volcanic risks	"piano di comunicazione del rischio" + vulcanico	No significant results	11/12/2023
Landslide	"piano di comunicazione del rischio" + slavina	No significant results	11/12/2023
Tsunami	"piano di comunicazione del rischio" + tsunami	No significant results	11/12/2023
Rockslide	"piano di comunicazione del rischio" + frana	No significant results	11/12/2023
Hurricane	"piano di comunicazione" + uragano	No significant results	11/12/2023
Avanche	"piano di comunicazione del rischio" + valanga	No significant results	11/12/2023
Extreme meteo events	"piano di comunicazione del rischio" + "precipitazioni estreme"	No significant results	11/12/2023
Seismic	"piano di comunicazione del rischio sismico"	No significant results	11/12/2023
Tempest	"piano di comunicazione del rischio" + tempesta	No significant results	11/12/2023
Tornado	"piano di comunicazione del rischio" + tornado	No significant results	11/12/2023
Typhoon	"piano di comunicazione" + tifone	No significant results	11/12/2023
Coldwave	"piano di comunicazione" + "ondata di freddo"	No significant results	11/12/2023
Heatwave	"piano di comunicazione del rischio" + "ondata di calore"	No significant results	11/12/2023
Sea level rise	"piano di comunicazione del rischio" + "innalzamento del livello del mare"	No significant results	11/12/2023
Thunder	"piano di comunicazione del rischio" + tuoni	No significant results	11/12/2023
Lighting	"piano di comunicazione del rischio" + fulmini	No significant results	11/12/2023

Not for disclosure? Understanding the role of risk communication plans. In conclusion, our research has not found documents that could be equated to a risk communication plan, understood as an operational guide for creating risk-related content. A risk communication plan should detail key elements such as distinctive content, sources, the schedule for message dissemination, communication channels, target groups, and specific objectives. Several possible explanations exist for such communication plans' absence or low visibility. They might exist but are considered by administrative entities as internal documents unsuitable for public dissemination, especially in the absence of legal requirements for publication.

Additionally, they may contain confidential information, such as private contacts or sensitive data, preventing their disclosure. Another consideration could be that administrative entities believe the public is only interested in the outcome of risk communication, thus not publishing documents deemed for internal use only. Despite this, the significant number of research project reports identified demonstrates a certain degree of commitment and sensitivity by institutions to collaborate with the academic and scientific community to improve communication practices. These collaborations can lead to concrete improvements and the sharing of knowledge and skills with the public, as well as to the optimization of existing processes. However, finding coherence or a unified system in these experiences is complex, and it often appears sporadic and fragmented. The documents found vary significantly in style, format, and purpose, making them difficult to compare and systematize. Consequently, we decided to focus on Civil Protection plans, whose origin and nature will be examined in the following paragraph.

5. Civil Protection Plans: what are they?

A Civil Protection plan, according to the directive of the President of the Council of Ministers no. 160/2021, "*Indirizzi di predisposizione dei piani di Protezione Civile",* is a document detailing all procedures to manage and overcome a disaster (natural, industrial, health hazards, etc.). Its goal is to efficiently coordinate the resources needed to intervene to protect the population and assets in a risk area or during hazardous occurrences. It has the objective of guaranteeing the maintenance of life, thrown into turmoil by a situation which means severe physical and psychological discomfort at civil levels by any means possible (Fagà & Casarotti, 2022). Information presentation responds to a specific articulation (introduction, framing of the territory, hazard and risk scenarios, intervention model). Civil Protection plans are subject to continuous updating (within 12 months of issuing the regional guidelines for municipal Civil Protection plans and with periodic review with a maximum frequency of three years). The updates are helpful to consider the variations in the expected scenarios.

Also, drills may contribute to updating the plan because they confirm its content and assess the personnel's operating and managerial capacity. The training helps the personnel to be employed in an emergency to better perform during an emergency. The Civil Protection plan is drawn up by an institutional body for its territory (State, Region, Province/Metropolitan City/large area, Municipality) with the contribution of all the actors of the Civil Protection system. Therefore, Civil Protection plans are prepared by the different levels of government. Its approval follows the sharing with all stakeholders, first and foremost the population, so they can have all the necessary information to deal with a potentially dangerous event and limit its possible effects.

6. The (re)quest for Civil Protection plans

Adopting the approach described earlier, which mimics the research strategy of an interested citizen, we analyzed the Civil Protection Plans. We defined the units for analysis and decided to include territorial units of varying sizes: regions, regional capitals, and municipalities, selecting two municipalities per region. Regional capitals were considered research units even when referred to as metropolitan cities. Municipalities, excluding regional capitals, have been selected consulting the Statistical Atlas of Municipalities published by ISTAT (https://asc.istat.it/ASC/). It allows identifying territorial characteristics that suggest potential natural or environmental risks. Specifically, we focused on areas with high hydrogeological risk, identifying areas with very high landslide and hydraulic hazards[2]. For each region, we chose municipalities with the highest risk index in these categories (one municipality for high landslide risk and one for high hydraulic risk). However, this selection cannot be defined as a representative sample as it only partially synthesizes all variables, such as territorial size or population density. To maintain a degree of risk representativeness, we did not replace the selected municipalities even if they coincided with regional capitals.

The purpose of selecting these units of analysis was to determine wheter there were any systematic differences between localities of varying sizes and governed by specific regulations. Additionally, the Mayor (the authority at the head of municipal governments) plays a significant role, as this figure is identified as the head of Civil Protection at the municipal level. Then, documents issued at the municipal level are of particular interest for investigating the role and centrality of communication practices in risk management.

The research was conducted by two researchers who used Google from their devices to enter the necessary keywords to identify the Civil Protection plans. Given the specificity of the documents, the search was also conducted by consulting the websites of the municipalities and local Civil Protection units, using internal search engines, and navigating through various sections.

To assess the responsiveness of local administrations, we opted to send emails to municipalities from which it was impossible to obtain the Civil Protection plan online. This approach was reserved for municipalities selected based on high hydrogeological risk criteria, aiming to test their commitment to sharing risk prevention tools. We assumed smaller municipalities' information and bureaucratic dynamics differed from regional capitals. Moreover, this operation was unnecessary for regional capitals, as almost all the municipalities have their Civil Protection plans published online. In this context, to adhere to ethical principles, we clarified the identity of the researcher sending the email and the purpose of the plan's request.

The email message was a standard template, identical for all municipalities, introducing a) the researcher's identity, b) the project, c) the project's goals, and d) how the Civil Protection plans were collected and managed. Since most emails received at least one response with a protocol number in the

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[2] The data comes from the ISPRA report on hydrogeological instability. The ISPRA Report on Hydrogeological Instability provides an updated analysis of landslide and flood risks in Italy. This document updates the risk maps for landslides, based on the Hydrogeological Setting Plans (PAI), and hydraulic risk, in accordance with the directives of Legislative Decree 49/2010, which implements the European Flood Directive of 2007. The maps used by ISTAT have been created by ISPRA, which has harmonized and integrated information from various District Basin Authorities.

days following the sending, we decided not to proceed with further reminders (recall). This decision was also made to limit the impact on the administrative management of the municipalities: sending a reminder would have meant introducing a new request into their systems, potentially overloading or further slowing down the processes.

In some cases, the researcher was contacted by phone to provide additional details on the request or to agree on the delivery of the material. All municipalities with whom there was a telephone conversation then sent the plan. In one instance, the material was sent about a month after the phone contact.

Only two Civil Protection plans at the regional level were identified. This led to consulting qualified stakeholders, notably the CIMA Foundation, a project partner, to examine potential gaps or errors in the researchers' search strategies. Investigations conducted by other significant stakeholders confirmed the rare presence of such plans at the regional level, suggesting that regions primarily focus on coordinating Civil Protection activities at the local level.

The research process resulted in collecting and analyzing 41 risk communication plans: 2 regions (Table C), 19 regional capitals (Table D), and 20 municipalities selected according to the hydrogeological risk criterion (Table E). Tables C, D, and E summarize the analysis units and the methods adopted for collecting the documents.

Table C - Civil Protection Plans - Regions

Region	Identification of risk communication plan
ABRUZZO	No
BASILICATA	No
CALABRIA	No
CAMPANIA	No
EMILIA-ROMAGNA	No
FRIULI VENEZIA GIULIA	No
LAZIO	No
LIGURIA	No
LOMBARDIA	No
MARCHE	No
MOLISE	No
PIEMONTE	No
PUGLIA	No
SARDEGNA	Yes
SICILIA	No
TOSCANA	No
TRENTINO ALTO-ADIGE	No
UMBRIA	No
VALLE D'AOSTA	Yes
VENETO	No

Table D - Civil Protection Plans - Regional Capitals

Region	City	Identification of risk communication plan
ABRUZZO	L'Aquila	Yes
BASILICATA	Potenza	Yes
CALABRIA	Catanzaro	Yes
CAMPANIA	Napoli	Yes
EMILIA-ROMAGNA	Bologna	Yes
FRIULI VENEZIA GIULIA	Trieste	Yes
LAZIO	Roma	Yes
LIGURIA	Genova	Yes
LOMBARDIA	Milano	Yes
MARCHE	Ancona	No
MOLISE	Campobasso	Yes
PIEMONTE	Torino	Yes
PUGLIA	Bari	Yes
SARDEGNA	Cagliari	Yes
SICILIA	Palermo	Yes
TOSCANA	Firenze	Yes
TRENTINO ALTO-ADIGE	Trento	Yes
UMBRIA	Perugia	Yes
VALLE D'AOSTA	Aosta	Yes
VENETO	Venezia	Yes

Table E - Civil Protection Plans - Municipalities

Region	Risk	Municipality	Civil Protection Plan	Plan retrieved
Abruzzo	landslide	Balsorano	No	required by mail, not answered
Abruzzo	hydraulic	L'Aquila	Yes	Online
Basilicata	landslide	Lauria	Yes	Online
Basilicata	hydraulic	Bernalda	No	required by mail, not answered
Calabria	landslide	Platania	No	required by mail, not answered
Calabria	hydraulic	Vibo Valentia	Yes	Online
Campania	landslide	Sessa Aurunca	No	required by mail, not answered
Campania	hydraulic	Castel Volturno	No	required by mail, not answered
Emilia Romagna	landslide	Bagno di Romagna	Yes	Online
Emilia Romagna	hydraulic	Ravenna	Yes	Online
Friuli Venezia Giulia	landslide	Pontebba	Yes	required by mail, not answered
Friuli Venezia Giulia	hydraulic	Grado	Yes	Online
Lazio	landslide	Veroli	Yes	Online
Lazio	hydraulic	Roma	Yes	Online
Liguria	landslide	Genova	Yes	Online
Liguria	hydraulic	Sarzana	Yes	Online
Lombardia	landslide	Valbondione	No	required by mail, not answered
Lombardia	hydraulic	Sermide e Felonica	Yes	Online
Marche	landslide	Montecopiolo	No	required by mail, not answered
Marche	hydraulic	San Benedetto del Tronto	Yes	Online

Molise	landslide	Pizzone	No	required by mail, not answered
Molise	hydraulic	Termoli	Yes	Online
Piemonte	landslide	Cesana Torinese	No	required by mail, not answered
Piemonte	hydraulic	Verbania	Yes	Online
Puglia	landslide	Panni	No	required by mail, not answered
Puglia	hydraulic	Foggia	Yes	Online
Sardegna	landslide	Urzulei	Yes	sent after email
Sardegna	hydraulic	Villacidro	Yes	sent after email
Sicilia	landslide	Palermo	Yes	Online
Sicilia	hydraulic	Lentini	No	required by mail, not answered
Toscana	landslide	Roccalbegna	No	required by mail, not answered
Toscana	hydraulic	Grosseto	Yes	Online
Trentino Alto Adige	landslide	Bolzano	Yes	sent after email
Trentino Alto Adige	hydraulic	Trento	Yes	Online
Umbria	landslide	Ferentillo	Yes	Online
Umbria	hydraulic	Foligno	Yes	Online
Valle d'Aosta	landslide	Courmayeur	Yes	Online
Valle d'Aosta	hydraulic	Courmayeur	Yes	Online
Veneto	landslide	Cortina d'Ampezzo	Yes	Online
Veneto	hydraulic	Porto Tolle	Yes	sent after email

7. Creating the research guideline

A research guideline was developed to examine Civil Protection plans in a detailed and comparative way. This guideline, detailing dimensions and categories of analysis, aimed to investigate three main research questions:

RQ1: What communicative aspects can be identified in the Civil Protection plans?

RQ2: Which operative actions, highlighted by the guidelines analyzed in the Deliverable 6.2a "Identifying best practices in risk communication: Guidelines benchmarking", are effectively incorporated into the Civil Protection plans?

RQ3: Can the communication management strategies in the Civil Protection plans be equated to those usually detailed in standard risk communication plans? If so, how?

The creation of the grid was guided by a deductive method. It started with analyzing insights from examining international guidelines, particularly the rules that characterize the most effective communication practices. Subsequently, these concepts were translated into concrete variables. Added to these were the insights obtained from the literature review conducted in Task 6.1, paying particular attention to factors considered limiting or, conversely, advantageous for effective risk communication.

The entire research team participated in discussing the research guidelines. The development phase of the research items initially involved a collective discussion over the issues and themes to be recorded, followed by various trial sessions on the analyzed Civil Protection plans and group discussions on the obtained results, to refine the tool.

This path, characterized by continuous dialogue and an iterative approach, was considered complete when the information extracted and analyzed through the research guideline was comprehensive and complete.

The research guideline has been structured into thematic sections to optimize the document's scanning. This approach is designed to provide an in-depth understanding and meticulous organization of the contents of the communication section or information in Civil Protection plans. At the heart of the analysis are the fundamental elements of communication processes, such as the source of information, the channels through which it is disseminated, the messages conveyed, the audiences (public) of these messages, and the feedback received. These components are examined in light of prevailing risk communication models, considering the unique organizational challenges that define public institutions.

The information in the document has been carefully organized within an Excel matrix to enhance the efficiency of research activities and data analysis. This strategy has enabled a concise and schematic organization of the data in the plans, facilitating a cross-sectional and aggregated analysis of the collected information. The use of this Excel matrix has not only simplified information management but has also significantly improved the efficiency of the research process, allowing researchers to quickly and accurately identify relevant information.

8. The research guideline

General information

1. Length in pages
2. Presence of authors/referents
3. Presence of contacts of the authors/referents
4. Publication date
5. Presence of technical updates
6. Is the document searchable from the internal search engine of the municipality's website?Yes/No (scroll maximum two pages)
7. Placement of the document on the institutional website of the local authority

Technical characteristics of the Civil Protection Plan

1. Nature of the document: Specifically designed for administrative/technical purposes or for dissemination.
2. Availability of a dedicated section for risk communication.
3. Location of the communication section: At the beginning, central part, or end of the document.
4. Length of the communication section (in pages).
5. Title of the communication section (e.g., "Information to the Public," "Risk Communication").
6. Types of natural or environmental hazards addressed in the plan (please specify).
7. Inclusion of a glossary or tools to facilitate understanding of the information presented in the plan.
8. Availability of online brochures for the plan.
9. Risk communication definition: If applicable, please provide details.
10. Mentions of case studies, best practices, or previous experiences.

Communicative dimension

1. Identification of the prevailing communication flow: a) unidirectional (provided only or mainly top-down communication, from the sender to the receiver) b) bidirectional (citizens' partecipation and feedback)
1b. Do any elements refer to specific risk communication models? If yes, specify models and traceable elements
2. Planned audience monitoring actions: yes/no
2b. Planned actions to listen to the public: yes/no
3. Type of risk communication addressed in the plan: a) prior communication; b) emergency information; c) post-risk information...
4. Main communication goal: a) information; (b) persuasion; (c) negotiation/dialogue; (d) more than one identifiable objective
5. Messages distribution: a) a single channel (specify which one); b) multi-channel (which and how they are coordinated with each other and by whom)
6. Sources of information for risk communication for municipalities (e.g. Civil Protection, Regional Council, "Commissione Grandi Rischi, Presidency of the Council, other international entities...): specify

Messages

1. Are there any formal instructions on drafting messages (e.g.: length, terms to be used)?

1a. Are there any templates for standard messages?

2. Is the language formal or bureaucratic, or does it already provide examples of 'translation' and simplifying technical information for citizens?

3. Are there references to managing the communication of probability and uncertainty? (if yes, please specify)

3a. Are there toolkits or operational tools for communicating probability or uncertainty?

4. Are there references to the management of visual information (graphs, maps, etc.) for risk communication? (if yes, please specify)

4a. Are there toolkits or operational tools for drafting visual information? (if yes, please specify)

5. Is there information on data-driven communication for risk?

Audiences

1. Presence/absence of information on the composition of the population

2. Presence/absence of specific elements for different target audiences (e.g. age, gender, people with disabilities, activists, climate change deniers, sceptics...). If yes, please specify

3. Attention to the emotional aspects of the audience (e.g. panic prevention, post-risk psychological/emotional management, etc...). If yes, also specify if there are elements of care communication expressly attributable to the management of the emotional dimension.

Strategy

1. Action Sequences: Identify whether there is a clear presence or absence of sequences of actions that need to be carried out. This includes detailing the specific actions and their intended sequence.

2. Media Relations Management Roles: Describe the professional figures assigned to manage media relations, outlining their specific responsibilities.

3. Media Relations Strategy: is the general strategy for managing media relations specified?

4. Crisis Management: Strategies for handling media relations during crises or emergencies, specifying the approach for the acute phase.

5. Social Media Policy: Detail the social media policy, including guidelines on content creation, posting, and engagement with audiences.

6. Editorial Plan: Describe the editorial plan, covering content themes, scheduling, and targeting strategies.

7. Timing of Messages: Provide guidelines on the optimal timing for posting information to achieve the best engagement.

8. After-Office Hours Communication: The plan outlines how to manage communication outside standard working hours, including who is responsible and the protocols in place.

9. Risk Communication Tools: List specific tools and methods for risk communication (e.g., workshops, radio or broadcast programs, drills, brochures, and public events). Please specify each tool or method.

10. Designated Risk Communication Personnel: Indicate if individuals or roles are specifically designated for risk communication, including their responsibilities and areas of focus.

11. Indications on the presence of risk communication training actions aimed at municipal employees or Civil Protection workers

12. Partnerships with experienced risk communication entities for conducting specific actions (e.g., Civil Protection, "Commissione Grandi Rischi"...)

13. Indication of contacts of communication offices or other offices that citizens can contact

14. Is there an indication of the team in charge of risk communication? Specify the number of figures and role

15. Devices for countering misinformation

Assimilation to a communication plan (summary section)

Indicate if there are:

1. General and/or specific objectives

2. Identify specific message targets

3. Risk communication methods

4. Key messages to communicate

5. Channels to use

6. Indication of message and channel targeting

7. Sources of information

8. Guidance on feedback analysis processes

9. Indication on moderation and management of comments and interactions (online/offline - specify)

9. Materials and methods

The analysis takes into consideration 41 Civil Protection Plans:

- 2 regional plans,
- 20 municipalities having at least a portion of their territory under high hydrogeological risk,
- 19 regional capitals.

 A list of the analyzed institutions is presented in the "The (re)quest for Civil Protection Plans" section. The criterion for selecting plans is based on the level of avaibility of the documentary sources. The documentation was collected by querying the main search engines (Google) and the internal search engines of the institutions' websites. In the event of a negative outcome, we emailed the interested entities. The analysis of the empirical material was developed by cross-sectionally analyzing the variables of the content analysis sheet. These methods made it possible to analyze the same variable for all the institutions in the sample. All plans were read carefully in their entirety. Researchers noted the text entries answering the information to be recorded in the matrix. Then, information has been codified in dichotomic or multiple variables through an iterative process. Results presentation has been organized to maximize the explanatory potential of the retrieved data. In the following paragraphs, we report the analytical results for each selected variable.

10. Main results

This section presents the main results of the Civil Protection plans content analysis. The results are organized with the aim of maximizing consistency in the presentation of results by making explicit the variables with which the Civil Defense plans were queried. For ease of reading, the database explicates only the variations cases.

10.1 General information

10.1.1. Length in pages

The length of the documents can be detected in 40 out of 41 Civil Protection plans. The only exception is the municipality of Bolzano, where the length cannot be determined as the plan consists of several volumes and tables. The number of pages varies from a minimum of 17 to a maximum of 746 pages. The majority of plans (20 including municipalities and regions) have fewer than 100 pages. Ten municipalities present plans between 101 and 200 pages. Six municipalities have plans with a length ranging from 201 to 300 pages. Finally, four entries issue plans between 301 and 800 pages. The heterogeneity of this data can partially be explained by the fact that most of the plans analyzed were approved before the directive's entry into force on 30 April 2021, which dictates the guidelines for preparing Civil Protection plans. Relevant updates may exist but are not traceable when consulting the online materials. Figure 1 details the length of pages of the detected planes.

Figure 1. Civil Protection plans' lenght in pages
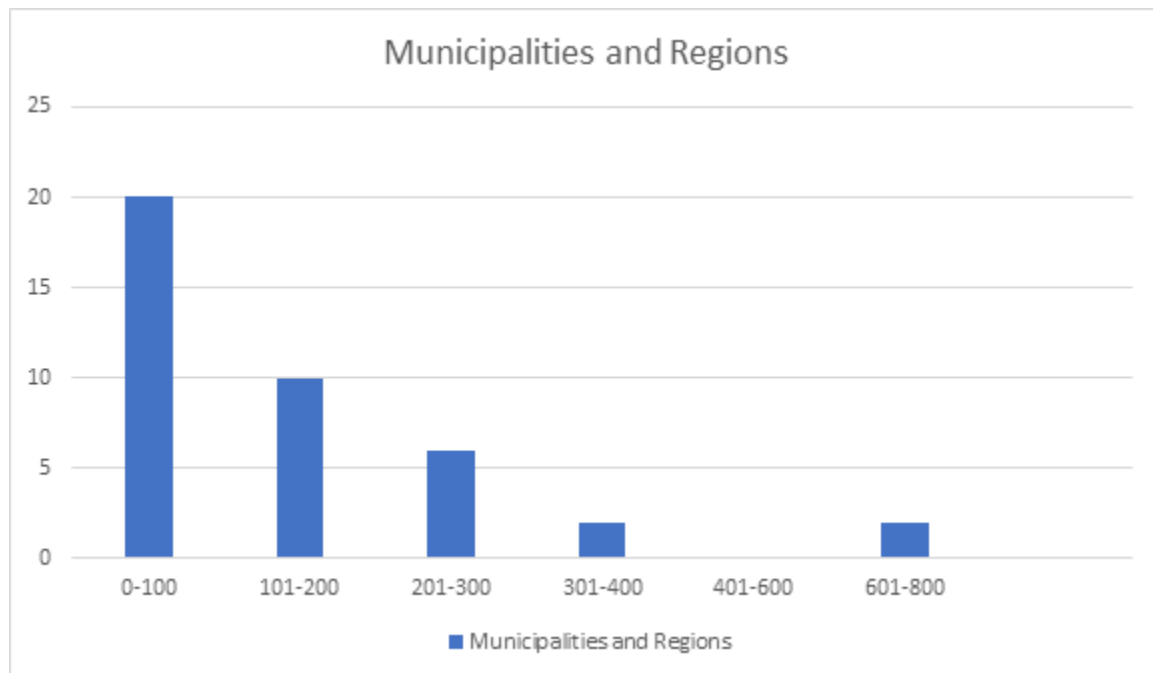
Analyzed plans: 41

10.1.2 Presence of authors or referents

Although it is not mandatory to record authors or referents in the document, according to the directive of 30 April 2021 on the guidelines of Civil Protection plans, the indication of the working group, external and/or internal collaborators, and any volunteers involved in the making of the Civil Protection plan offer relevant assessment elements.

The majority of Civil Protection plans (21) have an indication on the opening pages of working groups and/or professionals responsible for e drafting the document. In most cases, these are municipal working groups supported by Civil Protection volunteers (Venice) or the outcome of specific engagement projects, such as the one involving young people presented by the city of Rome). On the other hand, in some cases, Civil Protection plans are associated with the professionals involved in their making, such as engineering and architecture firms (Bari) or freelancers (Veroli, Porto Tolle).

10.1.3 Presence of contact of the authors/referents

The contacts of referents/authors who drafted the plan are available only for four Civil Protection plans (Potenza, Urzulei, Verbania, Porto Tolle) out of 41. The almost total absence of this data does not help the local population, mass media or external parties interested in promptly identifying the personnel responsible for drafting the document.

10.1.4 Publication Timeline

We reviewed the Civil Protection plans of 20 municipalities selected for their high hydrogeological risk. Among these, 19 plans indicate the publication or approval date. It was not possible to determine this data only for the municipality of Ferentillo due to the lack of information in the examined document. The plans analyzed span from 2006, with the case of Sermide and Felonica, to 2022, when the plan for Cortina d'Ampezzo was published. Most plans were released between 2006 and 2019, highlighting intense activity. The publication dates for the municipalities at risk are detailed in Figure 2.

Figure 2. Timeline of Civil Protection Plan publication for Municipalities at Hydrogeological Risk
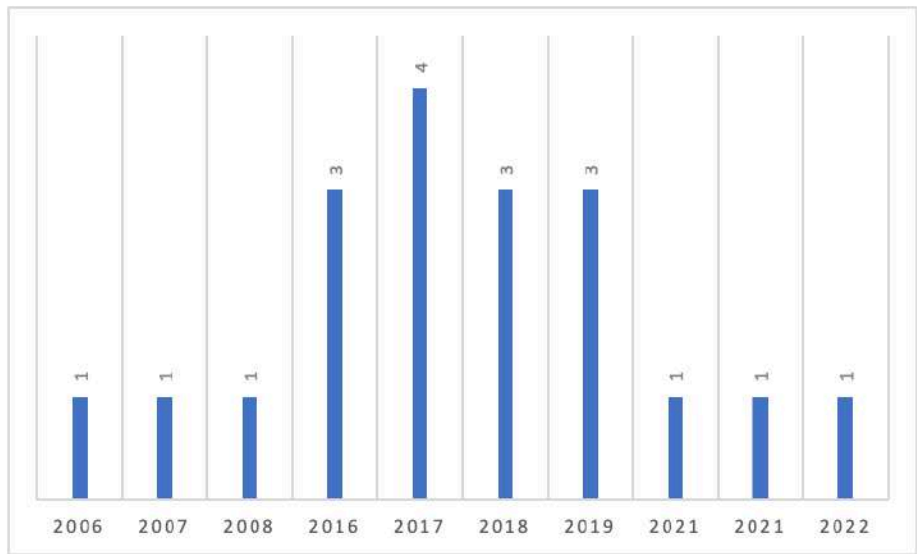
Analyzed plans: 20 - Value: 19

Five of the 19 Civil Protection plans of regional capitals analyzed lack sufficient information to accurately determine the publication or approval date. These cities include Perugia, Aosta, Catania, Trieste, and Milan. Venice's plan is the oldest, dating back to 2002, while Trento's was the most recent, published in 2023. Figure 3 depicts the timeline of the publication of Civil Protection plans for regional capitals.

Figure 3 - Timeline of Civil Protection Plan Publications for Regional Capital Municipalities.
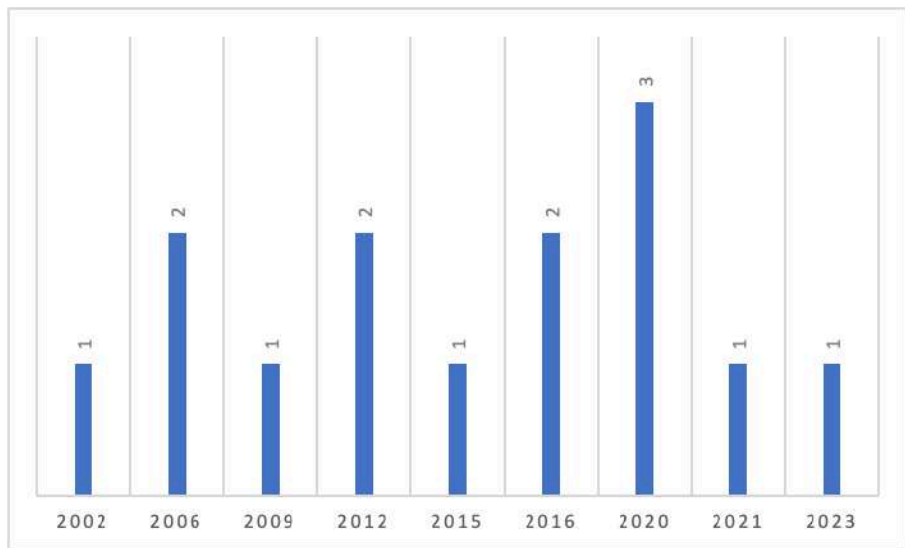
Analyzed plans: 19 - Value: 18

The plans for the two regions under review were published in 2016 (Valle d'Aosta) and 2019 (Sardegna). Current legislation governing Civil Protection plans mandates their review and update at least every three years. However, if updates do not involve significant operational changes, they can be handled

through decisions by the Mayor, the municipal council, or relevant administrative bodies. This indicates that, in some municipalities, only minor adjustments that do not affect the organizational structure may have been made, thus opting for this simplified procedure. In other instances, there might have been a discrepancy between administrative changes and their reflection on the website, suggesting a potential delay or omission in updating the information available online. The next section will describe the information about updates addressed in the Civil Protection plans.

10.1.5 Presence of technical updates

For citizens, knowing the contents of the Civil Protection plan is essential in emergencies because it identifies risk scenarios and develops the necessary tools to deal with them (Toseroni 2021). The plan is constantly evolving because the territory and risks change over time. Then, data may be subjected to checks and corrections. Moreover, the 2021 national and regional guidelines on implementing municipal Civil Protection plans indicate updates in frequency and details. Updates may consider new or unprecedented risks by drawing new maps. These maps may also be based on updated studies on the dangers of regional territories. Most plans (22) do not have an update date, and for three municipalities, this data is not detectable (Pontebba, Veroli, Sarzana) and for the city of Rome. In other cases, partial data refer only to updating the attachments (Florence). In the case of Cagliari, we learned from verbal interlocutions that the update process is underway and will end in 2024 (Cagliari). Other municipalities present updates dated between 2010 and 2023. These updates present the following distribution: 2010 (Potenza), 2011 (Trieste), 2013 (Grado), 2014 (Catanzaro), 2016 (Sermide e Felonica 2016), 2018 (Lauria), and 2019 (Genoa).

10.1.6 Accessibility of Civil Protection plans on institutional websites: searchability and positioning

We evaluated how accessible Civil Protection Plans are on the institutional websites of the investigated municipalities, intended as communication and archival platforms of institutions, by testing their visibility using the internal search engines of various municipalities. The method for searching via general search engines like Google has been previously detailed in the section "The Quest for Civil Protection Plans." Using the internal search feature on their official websites, we examined municipalities with high hydrogeological risk, regional capitals, and regions. This was to see if the internal indexing processes and the structured organization of information were efficient enough to quickly locate the document. This would be particularly beneficial for users unfamiliar with the document's location or unsure which section of the site to search. To emulate a typical user experience, researchers input "*piano di Protezione Civile*" into the search bars on the websites under analysis, reviewing up to two pages of results. It's important to note that, according to the Agid[3] guidelines, public entities' websites should adhere to a set of basic templates and elements for consistency. Despite variations in graphical layout and information organization across sites, all sites featured an internal search engine. Out of 20 municipalities with at least one high-risk area studied, 11 were not findable via the internal search engines. Four (Bolzano, Villacidro, Urzulei and Porto Tolle) had sent the plans via email, which indicates that these plans were

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[3] https://www.agid.gov.it/sites/default/files/repository_files/design-linee-guida-docs.pdf

not available online. The remaining nine municipalities had their plans indexed by internal search engines, with the relevant results often appearing at the top of the page, usually within the first three listings. Figure 4 shows the accessibility of Civil Protection plans on the websites of municipalities with a high hydrogeological risk.

Figure 4 - Searchability of Civil Protection plans on the websites of municipalities at high hydrogeological risk
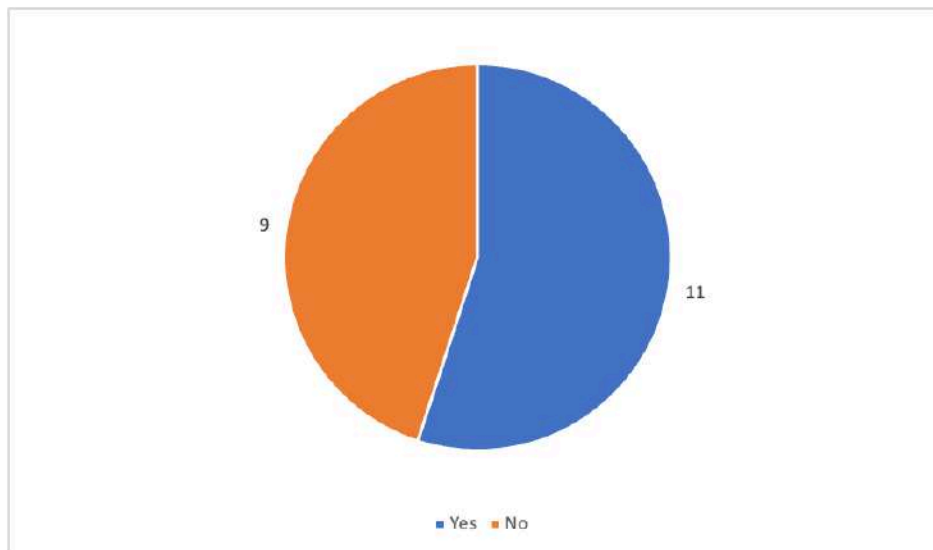
 Analyzed plans: 20

The same process was undertaken for the regional capital municipalities. Seven of the 19 regional capitals whose plans were analyzed did not yield any results through their internal search engines (Campobasso, Turin, Bari, Palermo, Perugia, Catanzaro, Milan). The remaining 12 plans can be located on the dedicated institutions' websites. Typically, these appear among the first search results when the display mode allows for result ranking. Figure 5 summarizes the searchability of Civil Protection Plans for the regional capitals.

Both regions examined, Valle d'Aosta and Sardinia, allow the plan to be traced with the internal search engine.

It should be noted that other relevant results identified by entering "Civil Protection Plan" in the internal search engine lead to pages and individual news items that notify of alerts issued by the Civil Protection or to legislative and bureaucratic information (for example, the acts promulgating the enforcement or modification of the plans). Rarely does this information pertain to educational material or announcements of initiatives aimed at the population.

Figure 5 - Searchability of Civil Protection plans on the websites of regional capitals
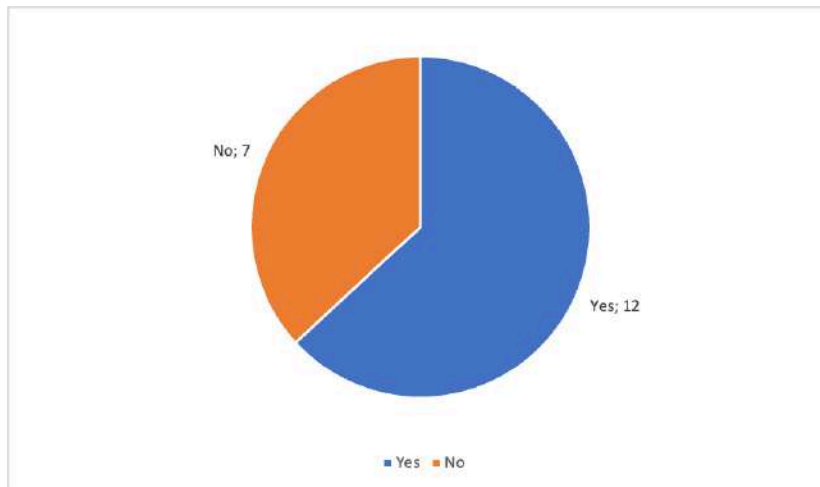
Analyzed plans: 19

The location of Civil Protection plans on the websites of local administrations has been examined. It is assumed that the location of a document on a site provides helpful clues for its interpretation. For instance, content in the news section may emphasize relevance and timeliness, while documents in the section for decrees and normative acts highlight their legal significance and the drafting process. A clear and systematic organization not only aids in memorizing the navigation path but also in the intuitive search for information within specific thematic areas.

In the study of 20 municipalities at high hydrogeological risk, the placement of 7 documents could not be determined as they were either not published or not indexed adequately on the websites. Regarding other plans, five were positioned in the Civil Protection section, typically accessible via banners or drop-down menus on the homepage. Another five were hosted in different sections, such as those related to the police or public safety. Two plans were found in the decrees and acts section, while only one was in the news section. The distribution of the placement of Civil Protection plans for municipalities at hydrogeological risk is depicted in Figure 6.

Figure 6 - Distribution of Civil Protection Plans within the websites of municipalities at high hydrogeological risk
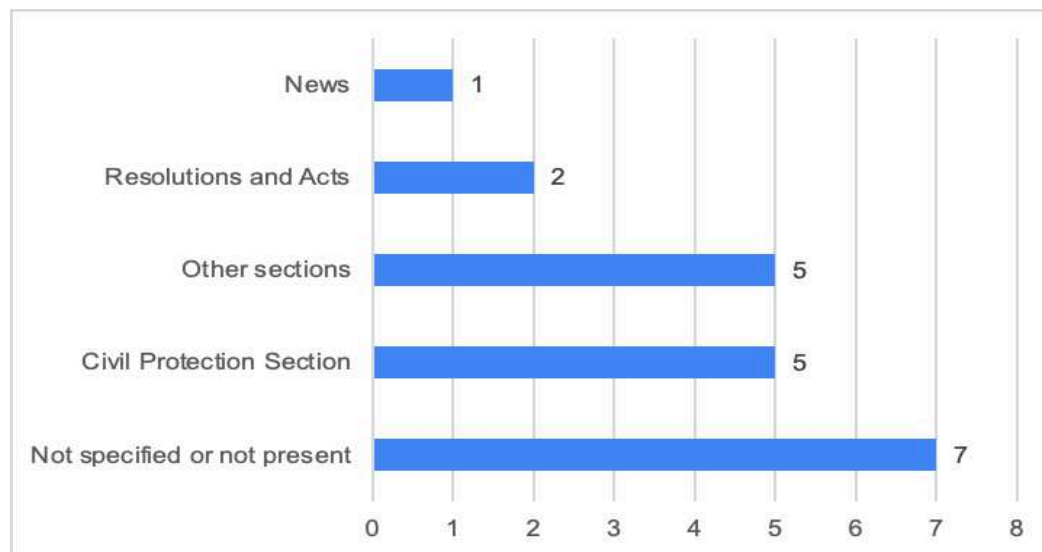
Analyzed Plans: 20

The analysis of Civil Defense Plans across 19 regional capitals reveals a more distinct categorization of their organizational sections. A majority, with eleven capitals, incorporate their plans within the Civil Protection section. Notably, Rome distinguishes itself by naming its section "Urban Security and Civil Protection." A divergence in categorization is seen in five capitals: Cagliari integrates its plan within an "Emergency Plans" section, L'Aquila categorizes it under "Plans, Programs and Projects," Bologna adopts "Services and Practical Information" as its section, and Trieste aligns it with the Police department.

However, the specific section placement remains unclear in three municipalities—Turin, Bari, and Milan—or is not disclosed. For clarity, Figure 7 depicts this comprehensive positioning of the Civil Defense Plans across the regional capital websites.

In addition to the capitals, the study covers two regions—Sardinia and Aosta Valley—which house their plans under the Civil Protection section.

Figure 7 - Distribution of Civil Protection Plans within the websites of the regional capitals.
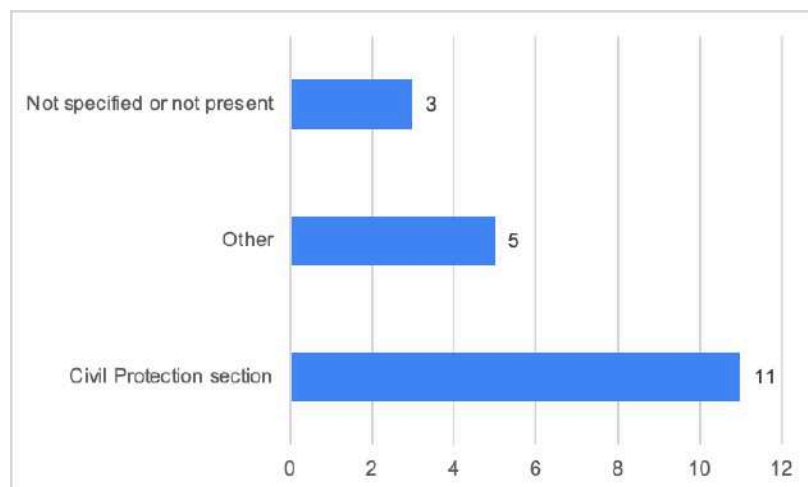
Analyzed plans: 19

10.2 Technical characteristics of Civil Protection plans

10.2.1 Nature of the document: Specifically designed for administrative and technical purposes or for dissemination

Simple and clear language in an institutional document promotes clear and unambiguous communication with citizens. The conscious care of relations with citizens (Ducci 2017) is an expression of the ability of an administration to get in tune with the recipients of its communication and information action. A Civil Protection plan, built with a technical language but supported by tools for simplifying information (leaflets, brochures, apps, etc.), allows citizens to reduce the effects of different types of risk. It is important to simplify messages by paying the right attention to technical language and giving concrete examples close to people's experiences. In the face of the literature that emphasizes the role of institutions in educating the population living in territories highly exposed to environmental risks (Ferrante 2020), out of 41 Civil Protection plans, only three stand out for their dissemination purpose. These concern a regional capital (Perugia) and two municipalities identified as areas of high hydraulic hazard (Foggia and Porto Tolle). Although presented as technical documents, another two plans, one regional and one municipal, are accompanied by informative material (Trento) or envisage a forthcoming simplified version (Sardinia).

10.2.2 Communication section: presence

The assessment included checking for a dedicated communication section within the plans, aiming to evaluate the significance attributed to communication in the strategies for risk mitigation, public preparation, and management of emergency stages and subsequent actions. The presence of such a section was determined by indicators of independence as a possible "stand-alone" section, including a

specific listing in the table of contents, distinctive typography for titles, emphasis through bold text, and unique section or paragraph numbering.

Only five municipalities in areas with high hydrogeological risks featured a communication section. Notably, Foligno presents a comprehensive Civil Communication Plan spread across multiple volumes, with the fifth volume exclusively addressing communication. The other municipalities with dedicated communication sections or elements include Ravenna, Urzulei (which boasts two sections), Villacidro, and Verbania. Courmayeur, in contrast, incorporates communication within an annex. Bolzano stands out with two annexes focused on communication, one concerning alarm systems and the other detailing emergency information flows.

Out of the municipalities examined, ten lack a dedicated communication section. Instead, they incorporate relevant content within other sections without explicitly naming them 'communication'. Specifically, in Ferentillo, communication-related content primarily pertains to technical aspects within the telecommunications sector. Grosseto, Foggia, and Termoli do not include a communication section.

In contrast, regional capitals demonstrate a more organized approach to communication. Half of the 19 capitals reviewed have a specific communication section. Five others—Bari, Florence, Catanzaro, Bologna, and Genoa—embed communication topics within sections labeled differently. In Trieste, the section most akin to communication focuses on logistics and oversight, covering areas such as transportation and telecommunications. Unlike these examples, Perugia and Milan lack a communication section or similar content.

Regarding regional plans, Sardinia features an independent section dedicated to communication. However, Valle d'Aosta's plan does not include a section of this nature.

10.2.3 Communication section: location

Planning communication in emergencies makes it possible to open multiple communication channels to facilitate exchange processes between all the social subjects involved, both in the phase preceding the emergency and in the phase in which the emergency is in progress. It means building the foundations of a continuous communication process on risk that crosses the different phases of the preparedness plan, from phase zero, which corresponds to a situation of danger and not risk, to the subsequent emergency phases. Therefore, the location of the communication section in a Civil Protection plan may express the importance attributed by public institutions to the *duty* to inform the population in emergency and risk situations. Most of the plans (18) place the communication section at the end of the document, followed by the 8 Civil Protection plans that place it in the initial part and six Civil Protection plans that provide it in the central part. Only one municipality dedicates an entire annex to the section (Courmayeur) while for eight municipalities it was not possible to collect the data because the section is not present in the plan (Perugia, Ferentillo, Bolzano, Trieste, Milan, Grosseto, Foggia, Termoli), as well as for the plan of the Valle d'Aosta region. Giving clear indications on how to consult information in communication is fundamental in enhancing self-protective behaviors. Indeed, if communication is not well planned and managed during emergencies, citizens may express uncontrolled fear (panic) or an attitude of complete carelessness, assumed as a defense mechanism. Consulting information on communication may be useful in preventing uncertainty during emergencies.

10.2.4 Communication section: page length

The length of the communication section or related paragraphs in municipal plans can indicate how thoroughly the topic is covered. In the case of municipalities located in areas with a high hydrogeological risk, five could not be assessed for page length. This was either due to the absence of a specific section or paragraphs on communication or because their information was presented in a different format, such as annexes. These municipalities include Ferentillo, Bolzano, Grosseto, Foggia, and Termoli. For the remaining municipalities that may be subjected to high hydrogeological risk, the amount of content dedicated to communication varies significantly, ranging from less than a page to as many as ten pages. Specifically, seven municipalities—Lauria, Vibo Valentia, Pontebba, Grado, Veroli, Sarzana, Sermide and Felonica—allocate less than one page to communication. Porto Tolle, Cortina, and Courmayeur each dedicate about a page to this topic. More extensive coverage is found in Urzulei, Villacidro, and Verbania, two pages each, and Ravenna, three pages. Foligno stands out by dedicating ten pages to communication, indicating a more comprehensive approach.

Once again, regional capitals demonstrate a heightened focus on detailing the risk dimension within their Civil Protection plans. Notably, Milan and Trieste lack a distinct section dedicated to communication, while Catanzaro briefly touches upon the subject with merely two lines. Contrarily, most other municipalities allocate at least one page to elucidate activities about risk communication. Specifically, Florence and L'Aquila dedicate an entire page to this endeavor, and Bari extends this to a page and a half. Further, Venice and Bologna provide a comprehensive overview of communication activities across two pages. An even more detailed exposition is seen in five capitals—Campobasso, Palermo, Aosta, Potenza, Naples—each assigning three pages. The discourse on this topic reaches its zenith in Turin, Trento, and Rome, with each city dedicating five pages. Remarkably, Cagliari is the capital investing the most effort into communication, allocating five pages to the cause.

Among the regions whose plans have been analyzed, Sardinia distinctively addresses risk communication, devoting six pages to the subject, thereby highlighting its commitment to thorough communication strategies. On the other hand, Valle d'Aosta does not feature dedicated sections for risk communication, indicating a varied approach to this critical aspect among regions.

10.2.5 Title of the communication section

The simplification of the section's title dedicated to informing the population can be a useful communication strategy to guide the citizens in reading an institutional document. Most of the plans (21) title the section mainly using generic expressions such as *Information to the population*. In rare cases (11), specific expressions are used in which the concepts of risk and uncertainty are referred to, such as *Means of warning and information to the population*, *Information and mitigation of risk*, *Warning system to the population*, *Information to the population in times of peace and emergency*, *Post-emergency communication*, *Communication Safeguard Measures, Plan Communication Strategies, Training and Information, Population Information Programs, Emergency Information.* For nine Civil Protection plans, on the other hand, it was not possible to detect the data because it was not present or could not be determined by the analysis of the documents.

10.2.6 Risk nature and management

Each municipality selected due to having at least a portion of their territory under high hydrogeological risk outlines in their plans the risks to be addressed. Besides natural and environmental hazards, these municipalities consider at least one additional type of risk, except for Sarzana, which focuses solely on hydrogeological, snow-related, and seismic risks. Risk management strategies are tailored to the specific characteristics of the territory and activities conducted within it. Risks beyond natural and environmental hazards outlined in the plans predominantly include chemical or industrial hazards, interface fires, nuclear risks, road accidents, disruptions to communication routes, and electrical blackouts. Five municipalities specifically tackle veterinary and health risks, suggesting that the COVID-19 pandemic will likely catalyze increased investment in procedural details for managing these risks, including developing targeted interventions. Only two municipalities, Sermide and Felonica in Foggia, plan to address social risks identified in events of local concern and terrorism risks.

The 19 regional capital municipalities analyzed highlight the various risks considered in their plans. Campobasso and Naples focus exclusively on environmental and natural hazards. It is presumed that local administrations can develop specific plans or procedures to address different risks, such as health risks, which run parallel with the Civil Protection plans.

Cities like Palermo, Perugia, Aosta, Venice, Genoa, Catanzaro, and Milan examine natural, environmental, and anthropogenic risks, including chemical, industrial, railway, and road accidents and electrical blackouts. Particularly, Venice differentiates between predictable risks associated with natural and environmental phenomena and unpredictable risks related to human activity, such as industrial and chemical accidents. Similarly, Catanzaro distinguishes natural risks, such as meteorological and hydrogeological ones, from those caused by humans, which are termed *accidental*.

Cagliari, Potenza, Bari, and Trieste add social risks to the natural, environmental, and anthropogenic ones, which include large gatherings, acts of terrorism, effects of international conflicts on the territory, and the management of citizens evacuated following natural disasters.

L'Aquila and Bologna address natural and environmental risks, anthropogenic and health risks. Turin, Florence, Trento, and Rome municipalities deal with a complete range of risks, including health risks. Rome emphasizes the prevention and management of the COVID-19 pandemic, inserting the pandemic in the title of the paragraph.

Regarding the regions, Valle d'Aosta and Sardinia present distinct scenarios: the former manages natural, environmental, anthropogenic, and health risks, while the latter focuses only on natural and environmental hazards.

Despite the variety of risk scenarios, the communication adopted by most municipalities tends to be *one-size-fits-all*, applicable to all types of risks, especially regarding practical and organizational procedures. In specific cases, such as in brief formal texts of notices and communications, differentiated indications are found for managing technical information related to chemical or industrial risks.

10.2.7 Inclusion of a glossary or tools to facilitate understanding of the information presented in the plan

A glossary in a public document is a list of specific terms explained clearly and concisely, making it easier for the citizen to read. Out of 41 plans examined, only 10 have a glossary. It highlights how local

authorities may consider Civil Protection plans as organizational documents. Intended as documents for internal use, Civil Protection plans still cannot be properly intended as institutional documents accessible to citizens, equipping them with useful tools, as a glossary may be, for understanding.

10.2.8 Brochures and dissemination materials

The Civil Protection plans we reviewed are predominantly technical documents intended for a specialized audience. We have investigated the presence of accessible dissemination materials on the web pages where these plans are published, such as brochures, summary guides, explanatory illustrations, and resources for non-specialists or specific audiences.

Eleven municipalities in areas of high hydrogeological risk do not offer additional explanatory material. Foggia stands out, presenting a plan already structured for dissemination, with illustrations and accessible language (see Figure 8 for an example). The other eight municipalities (Foligno, Bolzano, Lauria, Ravenna, Pontebba, Grado, Veroli, Sarzana) provide informative documents on their websites. Except for Sarzana, which directs its materials at volunteers, the other municipalities supply brochures that educate citizens on emergency actions or risk mitigation.

Only four regional capitals provide additional resources to understand the Civil Protection plans or to become acquainted with actions to take in risky situations. Trento offers a concise plan in PDF format and a PowerPoint presentation on its website. L'Aquila has an explanatory document and an educational brochure for schools. Potenza complements its plan with a leaflet for the populace. Rome condenses its plan into two brochures, one in English, catering to foreign visitors.

These materials represent a step towards specialized and targeted communication, also shaped by local specifics and past experiences, such as the focus on school education in L'Aquila or the availability of information in English for Rome, a city with high tourist appeal. No dissemination materials were found for the regions.

Figure 8 - Foggia's Civil Protection Plan (Extract)

Il piano comunale di protezione civile

È il principale strumento che utilizza il Sindaco per prevedere, prevenire e fronteggiare un evento calamitoso naturale o antropico sul territorio comunale. Rappresenta e/o anticipa tutte le attività di coordinamento che dovranno essere adottate per lo studio, le ricerche, l'attività di informazione rivolta alla popolazione, la pianificazione della risposta all'emergenza e le attività esercitative per gestire le emergenze.

Descrive:

- Il territorio naturale e antropico (fiumi, montagne, abitanti, tipo di costruzioni, ospedali, scuole, vie di comunicazioni, forniture energetiche e comunicative);
- I rischi naturali e antropici (rischio sismico, incendi, idro - meteo, industriale ecc.);
- Le risorse umane (forze armate e di polizia, vigili del fuoco, forestale, sanità e servizi sociali, ordini professionali, volontariato, istituzioni forniture);
- I materiali e mezzi a disposizione per movimenti terra, aria, acqua;

- Le aree di Emergenza (di attesa, di ammassamento soccorsi e ricovero popolazione di solito previsti in spazi aperti);
- Le procedure di intervento (insieme di attività previste e coordinate per prevenire, prevedere e fronteggiare le emergenze).

Città di Foggia
Assessorato alla Protezione Civile

10.2.9 Risk communication definition

Planning and communication are essential for developing interventions that prevent risks and manage emergencies. In an emergency, communication must be planned, organized, and refined to intervene quickly and in a coordinated way. In an institutional document such as the Civil Protection plan, providing a clear but precise definition of risk communication could be useful for citizens to understand the contents of the messages and the logic underlying their creation. Out of a total of 41 plans, only two plans refer to the definition of risk communication. The plan of the Sardinia region, although it does not provide an unequivocal definition, has a reference to the theme:

The complex issue of risk communication requires dynamic and multidisciplinary approaches aimed at cultivating resilience and awareness in local communities, including through the training and education of adults and the youngest sections of the population.

The plan of the municipality of L'Aquila, on the other hand, offers a more nuanced definition of risk communication, intended as a process that goes through the three phases of emergency management planning:

(...) emergency communication is correct and timely information on the evolution of the expected or ongoing phenomenon, on the rescue and assistance activities put in place to deal with critical issues, on the activation of components and operational structures of the Civil Protection System, on the measures adopted and, more generally, on all those contents that may be useful to the citizen, both in the imminence of an event, in the acute phases of an emergency, and in the subsequent activities to overcome the emergency itself (self-protection rules, activation of counters, toll-free numbers, etc.).

10.2.10 Best practices

Our examination focused on best practices in the Civil Protection Plan, especially those related to previous socialization and risk communication activities carried out by municipalities. These exemplary practices can serve as a model for future initiatives or demonstrate the expertise of the municipalities in question. Only Vibo Valentia and Courmayeur have reported their best practices in their respective plans among the municipalities with high hydrogeological risk areas. Courmayeur, in particular, describes the informational activities available on the municipal website in the plan. These activities include multilingual information on Civil Protection, the public version of the plan, advice for managing local risks, an emergency guide, a list of facilities with their locations, and printable informational materials.
Regarding the regional capitals examined, L'Aquila and Rome stand out for the initiatives mentioned in their plans. L'Aquila reports the activities planned in response to the public notice "Communicate to Protect." These include the creation of a digital platform and a smartphone app for disseminating emergency information, named Communicate to Protect AQ, and the installation of informational totems and beacons providing geolocated Civil Protection information. There are also planned introductory meetings with the citizens to explain the effective use of these tools. On the other hand, Rome introduced the initiative "Responsible Citizen."
None of the regions considered in this research mentioned previous risk communication initiatives.

10.3 Communicative dimension

10.3.1 Communication flows

Involving in the drafting of the plan all the stakeholders who may be engaged in the management of the emergency and who, at different times and in different spaces, can come into contact and communicate with the population is an important action to develop a functional plan to contain the consequences of a

catastrophic event. A two-way approach, capable of providing preventive interlocutions between citizens, administration, and professionals in charge of drafting the plan, can lead to a greater awareness among communities of the importance of risk communication in overcoming an emergency situation. Moreover, the analysis of international guidelines presented in the other part of this deliverable ("Identifying best practices in risk communication: Guidelines benchmarking") report how public risk management and risk reduction agencies are increasingly focusing on developing strategies suitable for enhancing two-way communication. These guidelines suggest that including audiences and citizens in planning and decision making may express additional value in planning effective risk communication tools.

Nevertheless, most plans examined (32) are characterized by a one-way communication flow. In this case, the information flows in a single direction, from a source to its recipients. Communication is established in a linear and sequential way, without the possibility for the population to enter into dialogue with the institution.

The two-way communication flow allows communication in both directions, meaning that data can be sent from the source to the destination and from the destination to the source. This is the type of flow detected for the Rome, Vibo Valentia, and Ravenna municipalities. The city of Rome, in particular, describes the process of implementing risk management tools by carrying out participatory dialogues:

> For the time being, it was extended only to municipal and departmental technicians, Local Police officers, and representatives of voluntary organizations. It continued in 2019 and was deepened during the first update, also through a process of sharing and building the Prototype Organizational Model for Municipalities, created in the first half of 2019.

The remaining Civil Protection plans do not present information on the prevailing communication model. Specifically, For six Civil Protection plans (Perugia, Grosseto, Urzulei, Foggia, Ferentillo, Temoli), it was impossible to determine the prevailing communication flow from the available empirical material.

10.3.2 Risk communication model and communication type

Risk communication refers to sharing information about potential hazards between authorities and citizens. The present analysis does not allow us to conclude whether public bodies responsible for risk communication integrate recognized patterns from specialized literature or established risk and emergency communication practices into their communicative processes. In other words, it is unclear whether administrations consider codified risk communication models when outlining their communicative processes. This uncertainty extends to the Civil Protection plans of cities with areas at hydrogeological risk, regional capitals, and regions since no substantial differences emerge in how they communicate risks or in the specific forms that such communication takes in relation to the identified dangers.

The Civil Protection Plan serves as a guide and a tool for consultation. It could exemplify how information is exchanged and how a two-way dialogue could be established: citizens are informed about the authorities' actions. They can assess current processes, suggest changes, and provide feedback on

planned activities. They can also report discrepancies between the documented plans and actions during emergencies.

These processes of early disclosure of risk management procedures positively influence risk communication. Linked to transparency and the broader processes of administrations' accountability, they contribute to trust-building through participation in decision-making (Kasperson et al., 2010) and related activities. At the same time, Civil Protection Plans can be identified as risk communication tools. Consider a definition of risk communication like the one proposed by Covello (2021: 14-15):

> Risk communication can be defined as the transfer and exchange of information among interest parties about the nature, magnitude, significance, or control of a risk. Information about risks can be communicated through various channels, including, but not limited to, fact sheets, websites, webcasts, reports, texting, emails, social media postings, warning labels, billboards, bulletin boards, public meetings, and public hearings.

Civil Protection Plans are tools for disseminating and exchanging information about risk management. Simultaneously, these plans are a necessary but not always sufficiently adaptable means of informing citizens during heightened risk or emergencies. In such situations, the dialogical pact is replaced by a call for self-protection institutional messages (Mileti & Peek, 2000; Sellnow & Sellnow, 2010). Notably, the information instruments designed by Civil Protection Plans are primarily aimed at providing informative communication (see also the section on the titling of communication sections). Although there are attempts at prevention, the emergency dimension receives more focus. This organization seems to replicate – though not slavishly, and it's uncertain if intentionally – emergency communication models like that proposed by Coombs (2009), wherein those managing emergencies seek primarily to establish strategies to communicate self-protection measures to their stakeholders.

Most communication outlined by risk communication plans is *informative*, with a specific *instructional* intent (Sellnow & Sellnow, 2010). Emergency communication models, like the IDEA model (Sellnow et al., 2017), could fit the nature of the technical information in Civil Protection Plans. The model comprises four elements:

- ***I**nternalization*, where recipients should be provided with elements that help them internalize the potential impacts of risks or crisis events.
- ***D**istribution*, which should identify appropriate channels and strategies for disseminating messages about risk or crisis events.
- ***E**xplanation*, where the nature of risks and crises should be briefly explained.
- ***A**ction*, detailing functional steps for self-protection that citizens should take.

The analyzed Civil Protection Plans partially respond to this model. For instance, few plans address or consider the psychological and emotional dimensions of the audience, mostly translated into strategies to counteract panic. Distribution is often detailed by outlining communication channels but is not always differentiated by risk phase and target audience. Explanation remains primarily the domain of technical information and the plans' supporting charts, maps and tables, but it is not always translated into

simplified language accessible to a general audience. Lastly, the plans do not explain the sequence of actions to protect from risks or handle emergencies, nor do they offer communication solutions to demonstrate these aspects to the public. As can be seen, the plans are not always accompanied by illustrative material to inform the public and provide models and sequences of behavior.

10.3.3 Audience monitoring or listening

Monitoring risk communication audiences may be useful for detecting the functionality of the risk communication tools among all the subjects involved in the process. However, out of 41 plans only two (Foligno and Villacidro) have these references. Specifically, the plan of the Municipality of Foligno indicates:

> the provision of tests of risk communication applications, first within administrations and then with increasingly large audiences (Municipality, volunteers, local and health operational structures, educational institutions, and citizens).

The Municipality of Villacidro, on the other hand, refers to the public's low participation in activities of socialization at risks carried out previously, suggesting the existence of a system to record and monitor attendance at in-person activities. No initiatives referring to monitoring and analyzing online comments and other relevant users' activities have been detected.

10.3.4 Message distribution and media channels

As previously discussed with the IDEA Model (Sellnow et al., 2017), identifying the most effective channels for disseminating risk information and issuing alerts and emergencies is crucial, primarily when public authorities aim to provide risk management instructions.

However, our analysis of Civil Protection Plans has revealed that this aspect is not always addressed adequately. In the case of municipalities, we found seven instances where this information was either not detailed due to brevity in the communication section or not specified at all. In the remaining 12 cases, a multi-channel approach is preferred. Similarly, out of the 19 regional capitals examined, six (Milan, Florence, Perugia, Potenza, Catanzaro, Naples) did not provide sufficient information to determine the communication channels to be used. The rest of the regional capitals anticipate a multi-channel strategy.

This strategy often integrates in-person activities with risk communication channels, such as drills or public discussion initiatives. These include broadcast communication and the use of alert tools, considered as auditory signals for the start and end of emergencies (sirens and pre-recorded announcements), and (less commonly) notification instruments via phone calls or SMS to personal devices of citizens. Furthermore, web platforms and social media are rarely mentioned in the plans (considering their average age) and, when included, tend to reinforce a unidirectional communication strategy with broadcast logic. Finally, the channels are not always targeted or differentiated. When they are, it is primarily concerning the phases of the emergency. For example, the channel segmentation proposed by the municipality of Cagliari is as follows:

In the event of a predictable emergency, if the expected event allows for an adequate margin of time, written messages will be used which do not lend themselves to interpretations or verbal distortions (video news, posters, press releases, etc.), disseminated through radio and television broadcasters and press agencies (RAI TRE, TELETEXT, local televisions, etc.). In the case of an immediate emergency, mobile public address systems will be employed (vehicles from the Municipal Police Corps and the Municipal Civil Protection). The means and methods used for the pre-alarm will be utilized for the end of the emergency signal.

10.3.5 Main communication goal

The Civil Protection Plan is a very useful tool because citizens can be informed and are protagonists in an emergency. An informed citizen is the best actor in emergencies as it may help risk operators safeguard human life and people's property. Considering the document's communication objectives, most plans (29) present informational purposes. Among these, eight plans combine the purpose of information with raising awareness in the field of Civil Protection (Trento), alerting (Cagliari and Foligno), training (L'Aquila), and prevention (Potenza, Rome, Ravenna, Pontebba). More specific objectives, which look at the communities' resilience (Toseroni, 2021) as a strategy to increase knowledge of risks and opportunities for damage containment in emergency conditions, are found in three instances (Turin, Florence, Venice). In these plans, the importance of spreading the culture of Civil Protection (Anecchini *et al.*, 2020; Galluzzo, 2023) is also noted as a strategy to raise awareness of the Civil Protection system at the regional level and above protective behaviors to be adopted in the event of an emergency. On the other hand, a small number of plans (five) have objectives that can only be referred to the communication of the state of alert (Bari, Bolzano, Grosseto), awareness (Courmayeur), and prevention (Urzulei). The communicative purpose cannot be determined on the basis of the empirical material available for four municipalities (Perugia, Ferentillo, Foggia, Termoli).

10.4 Messages

10.4.1 Guidelines for message drafting

This aspect aims to evaluate whether Civil Protection Plans contain detailed information that contributes to outlining how to craft risk communication messages. Establishing stylistic and formal rules, tone of voice, and narrative strategies from the outset ensures a uniform and consistent communication style, even with the turnover of communicators that can occur with changes in administration.
Concerning municipalities with high hydrogeological risk in parts of their territory, 11 do not provide helpful information for drafting messages (Cortina d'Ampezzo, Courmayeur, Bolzano, Pontebba, Grado, Urzulei, Villacidro, Foggia, Termoli, Porto Tolle, Ferentillo). The other nine municipalities specify elements of message drafting, but except for Sarzana, which offers a specific message drafting template, the instructions remain too generic and sometimes interchangeable. Consider the guidelines provided by the municipalities of Veroli and Vibo Valentia:

Information will be disseminated clearly, concisely, timely, and regularly by a specific COC [Municipal Operation Center] Function, an expert in communication appointed by the Mayor as the official spokesperson. (Veroli)

The content of the messages must be clear, concise, precise, and essential. Information must be disseminated promptly, at regular intervals, and continuously. (Vibo Valentia)

This may indicate the generic guidelines consulted by municipalities in drafting their Civil Protection plans. For regional capitals, message drafting rules are only present in five cases (Campobasso, Turin, Naples, Bologna, Aosta). Here again, the information remains fundamentally generic, emphasizing clarity and differentiating the various phases of an emergency.

Regarding the two regions analyzed, Valle d'Aosta does not provide instructions, while generic suggestions for drafting messages are offered by the plan published by the Sardinia region. In this case, it is envisaged that messages must be

Written in simple and understandable language for the recipient, relating the most alarming aspects of the information (risk) with the possibility of preventing or mitigating undesirable effects through adopting self-protection behaviors and adherence to the measures indicated by the Information Sheet.

10.4.2 Sources of information

Activating an effective communication channel during emergencies is one of the primary objectives for those who manage a Civil Protection plan. The reliability of information passes through the legitimacy of the system of sources. However, in most Civil Protection plans (36), it is impossible to find this information, as they do not identify sources or present sufficient information. Sources are stated in only five plans. In these Civil Protection plans, the institutions are presented as legitimate sources of information in emergencies. In the Civil Protection plan published by the municipality of Foligno, it is stated that it is important to draw on the data, figures, and information of the subjects who coordinate the rescue. In a plan (Ravenna) the regional site is identified as the source of official communication for the alert system; in two plans (Pontebba and Grado) the legitimate source is data and information from the Prefecture.

10.4.3 Language used in Civil Protection plans

Civil Protection Plans can be considered risk communication tools as they proactively acquaint citizens with the aspects related to risk management. Additionally, their technical sections provide detailed information on territorial specifics and the risks that could be present in the area of residence. The document helps to clarify the responsibilities and decision-making chains of administrations. Moreover, the Civil Protection Plan outlines the information necessary to initiate protective actions, such as "safe rooms" for citizens or the methods for reporting emergencies.

However, the language used in the plans is typically formal and bureaucratic, except for the municipality of Foggia, which aligns the plan's publication with an illustrative brochure. No stylistic differences have been noted between municipalities with areas at high hydrogeological risk, regional capital municipalities, or regions. Several factors can explain this technical language. On the one hand, the document has internal legal and organizational value, addressing those who work within administrations comfortable with the legal and bureaucratic language, as well as the more technical and specialized language concerning the types of risks and the morphology of the territory. Consequently, administrations may have allocated (or plan to create) products specifically designed for citizens, translating the plan's information into a more operational and straightforward language.

10.4.4 Standard messages templates

Using templates to draft messages in emergencies can help the population recognize useful information to deal with the situation. Preparing the right methods in *peacetime,* focusing attention on communication to prevent/inform the citizenry, and also with templates that can be understood and recognized help to control what is happening and the degree of preparation concerning the event. However, this recommendation is not central to the plans analyzed. Out of 41 Civil Protection plans, only five provide templates for the drafting of trade union ordinances (Ferentillo), weather forecasts (Naples), alert messages (Sarzana), and internal communication to the province and region (Grosseto). Two plans present the summary of initiatives with information indications (Trento) and an annex with templates for the drafting of alert messages (Cagliari).

10.4.5 Communicating probability and uncertainty: instructions and toolkits

Communicating information about potential hazards from experts to the public is complicated by *uncertainty*. The communicative impact of ontological, epistemic, and social uncertainty can be attributed to several factors, including limited scientific understanding of a phenomenon, the natural variability of events, or complex interactions between risks and their sociocultural environment. To effectively address uncertainty, it is essential to be transparent in describing the limits of scientific knowledge, using clear and accessible language to describe probabilities and potential effects. Moreover, institutions should foster and promote ongoing dialogue among scientists, policymakers, and communities. As part of an effective risk communication strategy, messages should also be tailored to the audience's diverse risk perceptions.
In drafting the plans under consideration, this aspect seems to be underestimated, given that out of 41 plans, only 4 have references to uncertainty in communication. However, the concept of uncertainty is never detailed and addressed in reference to its ontological, epistemic, and social dimensions. Civil Protection plans that refer to it merely mention the concept in a generic manner, using uncertainty mostly as a synonym for doubts or hesitations that citizens receiving instructions might encounter. Civil Protection plans for Naples, Genoa, and Vibo Valentia contain generic information, as well as the Civil Protection plan of the city of Turin plan where this passage can be read:

It is also important to define the possible sequences of the various alarm phases and related messages to allow the population to follow the situation's evolution without uncertainty and prepare to adopt the previously defined behaviors in time.

Toolkits for probability and uncertainty can provide communication professionals with useful tools for coping with risk communication. They can also be useful in simplifying the understanding of complex operating procedures to be followed in emergencies. However, none of the selected plans present operative tools.

10.4.6 Data-driven communication

The data-driven approach is fundamental in sociology and many other disciplines. It is based on the collection, analysis, and use of data to develop effective strategies. It also allows researchers and decision-makers to examine quantitative and qualitative data to better understand social behaviors and dynamics. Applied to risk communication, this approach allows databases to be used to develop effective communication strategies. However, the plans under consideration underestimate the effectiveness of this approach, considering that out of the total number of 41 Civil Protection plans, none contains information on data-driven communication for risk. Then, public institutions still do not indicate in formal documents the construction of monitoring systems for the traceability of information and citizens' reactions, which are useful for planning risk and emergency communication strategies.

10.4.7 Visual communication in Civil Protection Plans: instructions and toolkits

Visual communication is critical in the effectiveness of risk communication messages, as highlighted by several studies (Eppler & Aeschimann, 2009; Glaas et al., 2015; Herring et al., 2017). It is essential both in prevention, to raise awareness of risks and protective measures, and in emergencies, where it provides specific instructions on actions to take. Despite this, all local authorities analyzed in this deliverable, including municipalities with risk areas, regional capitals, and regions, seem to underestimate the importance of visual communication in their Civil Protection plans. In their preferred communication channels for risk communication, local authorities often use visual elements, such as brochures, flyers, television, or digital media. Nevertheless, no specific guidelines exist for using standard templates or operational kits for creating infographics or visual content. An example of good practice is the municipality of Porto Tolle, which uses cartoons produced by the Japanese geological service to illustrate predictions of seismic shaking intensity according to the Mercalli scale. However, even in this case, there are no precise instructions on developing original materials that integrate or adapt such visual outputs following a specific style and content.

10.5 Audiences

10.5.1 Demographic information and target population

Understanding the target population is crucial for creating more effective communication strategies and accurately tailoring content and distribution channels (Bostrom et al., 2013; Dametto et al., 2023). Civil Protection plans typically provide insights into the geographical and demographic features of the communities they cover, focusing primarily on the land's geomorphology and human factors that could lead to anthropic hazards.

In our review, many plans include sections that elaborate on the demographic composition of the population. Specifically, for areas identified as high hydrogeological risk zones, demographic data is missing for ten municipalities, whereas the other half does provide such information. Regarding regional capitals, twelve plans lacked details on population composition, but the remaining seven municipalities (Campobasso, Turin, Bari, Florence, Trento, Cagliari, Rome) included demographic information. The studied regions of Sardinia and Valle d'Aosta did not offer demographic details.

The depth of this information varies significantly. Some areas provide basic details like gender and age distribution, while others include information on vulnerable populations, such as those not self-sufficient. Additionally, some municipalities report on the presence of foreign nationals, students, tourists, living arrangements, and citizens' marital status.

This wealth of information is invaluable for designing truly effective risk communication tools. For instance, many foreign residents or significant tourist traffic indicates the need for multilingual messages and tools. A broad student population, particularly in cities with large universities attracting commuter and out-of-town students, suggests that educational institutions could be key partners in risk communication, possibly through educational training sessions or material distribution. Likewise, these and other transient communities would benefit from tools designed to familiarize them with the local area and potential risks.

However, despite municipalities' access to this demographic data, Civil Protection plans rarely link it to tailored risk communication and emergency alert strategies.

10.5.2 Communication strategies aimed at target audiences

The flow of communication cannot be reduced to mere distribution of information. Yet, it can be articulated in a system of tangible and intangible tools functional to the reduction of conditions of vulnerability (Mela et al., 2017). Communication should be designed to address the needs of communities exposed to risks and calamitous events. Public dialogue may engage local populations on risk and emergency management. The communication flow must be flexible and adapt to different population segments' communication and understanding needs. For instance, particular attention must be given managing communication flows that affect not only resident citizens but also temporary citizens and those who stay temporarily in the area for work or tourism reasons. As for targeted communication strategies, out of 41 Civil Protection plans, 16 (Cagliari, Aquila, Campobasso, Turin, Florence, Trento, Cortina d'Ampezzo, Courmayeur, Potenza, Trieste, Rome, Vibo Valentia, Pontebba, Grado, Urzulei, Verbania) underline the importance of a communicative action that must take into account the

socio-demographic characteristics of the recipients; the different levels of vulnerability that characterize some population groups (elderly, people with disabilities, foreigners, etc.); the presence of sensitive structures (schools, hospitals, shopping malls and other high-traffic places, accommodation facilities, etc.); the presence of groups of different nationalities among the population for which it is necessary to translate information materials into other languages. Particular attention must be paid to people with reduced autonomy (the elderly and people with disabilities, often surveyed by the Municipal Administration in the demographics section), to people who may be hospitalized in health facilities, and to the school population. In these cases, some municipalities present a strategy to facilitate the reunification of families in the reception areas. The focus on differentiated targets on a considerable number of levels can be read as the commitment of public institutions to ensure the inclusion of all sections of the population in a delicate communication process, such as suggesting risk socialization or activation in emergency conditions.

10.5.3 Focusing on emotional response in risk communication

The literature highlights how specific emotions can elicit different responses in risk understanding and readiness to follow instructions from authorities during emergencies (Xie et al., 2011; Roeser, 2012; Sjöberg, 2007; Turner, 2007). Risk communication can help manage these emotional aspects or tap into the audiences' emotions to be more effective.

However, the Civil Protection plans we have analyzed are predominantly operational documents and do not devote much space to managing the emotional aspect of risk and emergency communication. The few references found – in four municipalities at risk (Foligno, Bolzano, Ravenna, Urzulei) and five regional capitals (Campobasso, Palermo, Bologna, Rome, and Genoa) – are mostly generic, not detailed, and primarily focused on panic management. These insights translate into generic guidelines on message composition, ensuring they are clear and appropriate for the emergency, as demonstrated by the instructions in the Civil Protection plan of the municipality of Campobasso:

> Significantly different effects can be caused by an alarm broadcasted intermittently, without any protocol, on radio/television, not followed by comments or sufficiently detailed instructions. In this case, two things can happen: a) the population may not notice the alarm or take it seriously without confirmation from local institutions; b) the population may react with confusion and panic, desperately seeking reassurance, news, and instructions on what to do.

Lastly, it is specified that the analyzed Civil Protection plans do not foresee monitoring actions aimed at understanding the public sentiment regarding the information received or reactions to ongoing emergency experiences.

10.6 Strategy

10.6.1 Action sequences planning

The management of emergency conditions should always be planned in advance. Nevertheless, institutions may not fully fit into a precise scheme when a crisis occurs. A well-managed situation, scheduled for every risk stage, cannot be separated from providing synergistically structured actions and defining their "main actors." With a structured plan, all the measures that serve to prevent or control a crisis are defined so that all the necessary preventive measures are implemented to deal with future crises. Despite the importance of planning actions, out of the total of 41 Civil Protection plans, only seven (Trento, Ravenna, Sarzana, Villacidro, Cagliari, Bologna, Lauria) indicate the sequence of actions to be carried out in the planning of information. These indications are heterogeneous and concerning: the methods of branching the early warning and alarm (Trento), the urgent notices to the population for evacuating areas at risk that require loudspeakers (Lauria). In only one plan (Ravenna) there is a detailed description of the preparation of the essential messages to be disseminated through the media to reassure the population and avoid the onset of panic that causes irrational and often counterproductive behavior. In other cases (Cagliari), even if there is no detailed sequence, the generically indicated steps to be taken into account in the information design are noted.

10.6.2 Identification of communication professionals in media relations management

In the context of public administrations, activities related to public sector communication are regulated by laws, with a prime example being Italy's Law 150 of 2000, titled "Regulations for Information and Communication Activities of Public Administrations." This landmark legislation, the first in Italy, addresses public sector communication and its associated professions within a pre-digital media landscape. Yet, it remains the primary legal reference for public sector communication practices (Ducci et al., 2020; Comunello et al., 2021).

The law distinguishes between *information* activities directed at the mass media and *communication* efforts to engage citizens and administrations. It also outlines the roles and responsibilities of communication professionals within public administrations, detailing their tasks and activities. This clear delineation of duties, especially in risk communication, is crucial for defining the decision-making hierarchy and minimizing uncertainty. It ensures that journalists, media outlets, and citizens know the official sources of information and updates, enhancing the credibility and authority of the communicated content.

However, an analysis of Civil Protection plans reveals a frequent lack of clarity regarding who is responsible for media relations, both in peace time and during emergencies. This ambiguity is observed across various municipalities, including those at high hydrogeological risk, regional capitals, and entire regions. Notable exceptions include Palermo and L'Aquila, which broadly mention experts tasked with press office duties, and the municipalities of Pontebba and Grado, which specify individuals responsible for certain aspects of communication, such as social network management and community engagement rather than traditional media relations.

This gap in identifying specific communication roles may stem from the discrepancy between Civil Protection plans designed to endure administrative changes and the reality of communication staff. These individuals often differ from the usual municipal officials and may include external consultants appointed directly by the Mayor, subject to changes due to political shifts or the spoil system.

10.6.3 Media relations planning and strategies

Strategies for managing media relations in risk communication and emergency conditions convey useful information while trying to contain the possible effects of disinformation, especially for the most vulnerable sections of the population. However, this attention does not seem to be relevant to the Civil Protection plans examined, considering that only one of these (Palermo) provides for a precise procedure:

> Considering the probability of rapid succession of the phases of a crisis situation (attention, pre-alarm, alarm, emergency, development of the event, post-event), and in order to optimize the time necessary to establish contact with the mass media, in the C.O.C. [municipal operative center] operations room are available, and will be constantly updated, the mailing lists with the telephone and fax numbers of the press agencies, newspapers, regional newspapers, and local radio and television stations.

Given that 40 plans do not contain precise strategies for managing media relations, this may lead to the conclusion that the importance of these interactions is underestimated. However, this does not exclude the possibility that these may be regulated with impromptu procedures or formalized practices involving the communication staff and officials. These experiences may be tied to communication professional expertise and may not necessarily be stated in official documents such as Civil Protection plans.

10.6.4 Guidelines for managing media during crises and emergencies

Public administrations should meticulously plan emergency communications. It is critical to act swiftly to provide information, reassure citizens, offer guidance on their actions, and prevent uninformed parties from shaping the narrative. According to Coombs (2010), crisis communication is the judicious use of words and actions to handle information and meanings during critical situations. Thus, crisis communication encompasses two main areas of activity:

1. *Information* management, which involves efforts to gather information and oversee its distribution.
2. *Meaning* management, which aims to influence how people perceive the crisis and the organizations affected by or contribute to its resolution (Coombs, 2019).

The crisis management process should be integral to an institution's communication strategy. Coombs (2010) suggests this involves a series of designed responses to confront the crisis and minimize damage. This process includes various components, such as preventive measures, effective crisis management plans, and post-crisis assessments.

In the Civil Protection plans we reviewed, only a few municipalities provided guidelines on managing communication processes during crises. We found information on crisis and emergency communication management in just ten municipalities (Campobasso, Turin, Bari, Palermo, Venice, Cagliari, and Potenza for regional capitals; Cortina D'Ampezzo, Foligno, and Ravenna for municipalities with areas at high hydrogeological risk). These guidelines are generally broad and do not differentiate between the various stages of a crisis. The information in these plans primarily focuses on the dimension of *information*, outlining the organization and operational methods of the press room and all other entities tasked with crisis and emergency communication management.

Identifying the personnel responsible for managing the emergency and ensuring the clarity of the disseminated information is crucial, as shown in this excerpt from the Civil Protection plan by the municipality of Foligno:

> An area designated as a PRESS ROOM must be established at the C.O.C. [Municipal Operations Center], which, for effective operation, must:
> § Utilize a single spokesperson;
> § Provide availability and transparency;
> § Source data, figures, and information from those coordinating the rescue efforts;
> § Document the most important information on paper, noting the time and source, to compile an increasingly detailed overview of the situation.

Notably, the municipality of Ravenna attributes a central role in emergency communication to Civil Protection, as highlighted in the following excerpt:

> All information must be coordinated with the Civil Protection Service head and the Mayor, especially regarding the methods and timing of communication. Information for the public and mass media should only be released by authorized personnel, and it is strictly prohibited for any other members of the Civil Protection system (volunteers, operators, various staff, etc.) to distribute news to anyone.

10.6.5 Social media policy

A social media policy is a set of rules that defines how public institutions interact and behave on social networks. It is, therefore, a *governance* tool for the management of digital communication. Despite this, none of the 41 Civil Protection plans analyzed details a social media policy, although nowadays, almost all public institutions use social media to convey public communication. In risk communication, having a social media policy is particularly important as it clearly states when and on what page the content should be posted and who manages social media and community interaction. Moreover, a social media plan offers the opportunity to plan content to enhance citizens' knowledge of risks and territories.

10.6.6 Presence of an editorial plan

An editorial plan facilitates the scheduling of channels and timing for content publication, showcasing regularity and attention to detail in communication management. Editorial plans necessitate a strategic approach to communication activities. As a result, posts and content can be spaced out over time—for example, communication outputs intended to explain risks, their potential manifestations, and countermeasures. Conversely, some communication actions need to be daily and continuous, such as monitoring, managing, and responding to online comments.

None of the Civil Protection plans reviewed included an editorial plan. This absence can be interpreted in various ways. On the one hand, the information collected indicates a focus primarily on emergency communication, which can be managed in a planned manner but occurs unpredictably and cannot be scheduled. On the other hand, the lack of communication plans might suggest a decision to leave risk communication in the hands of communication teams, who may have their own independent timelines and methods, including how risk communication is integrated into the regular flow of communication.

10.6.7 Timing of messages

The timing of messages in risk communication considers the sequence of information and the indications about the right time to communicate, considering risk and emergency stages. Out of thel total of 41 Civil Protection plans analyzed, only seven (Campobasso, Turin, Palermo, Aosta, Foligno, Ravenna, Sarzana) present indications on the timing of messages with a heterogeneous level of in-depth analysis. The Aosta plan is the most detailed because it dedicates a paragraph entitled "Information times" to the subject, specifying the contents in the three phases of risk communication: preventive, emergency, and post-emergency information. Other plans highlight the timing of the messages: in the transmission process, taking into account the different phases of the day in which the emergency could manifest itself (Campobasso); in the drafting of written messages, taking into account the time lapse between the production of the message and the impact (Turin); in the updating of the information envisaged, every six months or, in any case, at least on an annual basis, intending to strengthen the incisiveness of the primary message and reaffirm the existence and effectiveness of the "presence" of the institutions (Palermo). Other plans (Foligno, Ravenna, Sarzana) contain general information on the timing of publication of messages in general and telephone alert messages in particular, and on the production of information concerning different phases (propaedeutic, preventive, emergency information).

10.6.8 Managing communication outside business hours

Establishing who will manage communications outside regular business hours is a best practice. For example, messages might need to be posted via social media outside office hours. In such instances, having a flexible staff ready to address communication needs is crucial, highlighting the optimization of internal and external communication practices (Massa et al., 2022).

This aspect, however, is not explicitly addressed in the Civil Protection plans we reviewed. Only three municipalities discuss the concept of continuous communication. The city of Bari specifies that communication will be handled by officials and personnel available 24/7 during emergencies. Palermo

ensures 24/7 availability of telephone lines, manned by specialized staff to provide citizens with information during emergencies. Venice indicates that emergency communication can only be provided by personnel who can work around the clock. Therefore, it is suggested that police forces could be involved, and essential information should be posted on the municipality and Civil Protection websites.

10.6.9 Risk communication tools

Civil Protection plans can be more effective if supported by specific tools for simplyifing messages intended for the population. Among the 41 plans analyzed, less than half (16) contains informative material for preventive and emergency information (Campobasso, Turin, Florence, L'Aquila, Potenza, Lauria) to encourage the participation of citizens in drills (Cortina d'Ampezzo) or intended specifically for volunteers (Sarzana). Other plans (Rome and Vibo Valentia) indicate using apps to encourage the socialization of risk communication-related issues with citizens and inform them about the alert system in real-time. Palermo focuses on 1) transmission of commercials lasting 5 – 10 minutes on local radio and television stations to disseminate useful information for the correct behavior of citizens in case of emergency; 2) promotion of training interventions in schools, especially in those located within areas where there are particular risks, aimed at disseminating specific knowledge related to risks and more general education in the culture of civil protection. In some cases (Villacidro), initiatives such as drills are planned to encourage the participation of citizens, given the low participation in previous initiatives. In this case, the municipality has been pursuing preventive actions to mitigate the risk by informing the population. To date, several meetings have been organized for the entire population, one in collaboration with the Region of Sardinia, to inform the population about the risks of the territory and the consequent rules of self-protection. Indeed, there has been low citizen participation. For the same purpose, brochures were sent to all the families, illustrating the same contents. Considering the lack of sensitivity of citizens to the issues proposed, the municipality of Villacidro plans to organize, in the future, information activities aimed at a targeted audience (schools, cultural associations, areas at risk) to convey the culture of Civil Protection throughout the country. Public events designed to convey preventive information also emerge in other plans, such as the one issued by Turin. Public meetings with the population must focus on Civil Protection issues to adequately inform citizens about the Municipal Civil Protection Plan and its main contents and civil protection organization at the municipal level. These meetings can be organized following the adoption of the Municipal Civil Protection Plan by the Municipal Administration and at different times, according to long-term planning that aims to keep the attention on the issue. The dissemination of useful preventive information is expected to be distributed to families residing throughout the municipal area or the areas presenting risk. Some plans (Turin) also detail the content of this material. The brochure must clearly and comprehensibly describe the types of risk to which the municipal territory is potentially exposed and provide summary information to allow each citizen to recognize - quickly and without any ambiguity - the emergency messages and their origin. It is also essential to define the possible sequences of the various alarm phases and the related messages.
The use of apps as a channel aimed at the greatest number of citizens to make the contents of the Civil Protection Plan easily accessible is detectable only for Rome and Vibo Valentia. In the capital city, the "ProCivRomApp" mobile application is promoted. The app, depending on the usage profile set, allows the receipt of civil protection information, the sending of geo-referenced reports to the Operations

Room of the Capitoline Civil Protection, and the geo-referenced representation in real-time maps of the location of events and operators present on site. Specifically, "ProCivRomApp" is configured as an interactive consultation tool for the contents of the Emergency Plan (risk areas and scenarios, civil protection resources, self-protection measures), warnings, and weather alerts issued by the Regional Functional Center, updated in real-time (automatic push for "yellow" or "orange" alert via mobile). For the Municipality of Vibo Valentia, the Emergency Plan can be consulted interactively through the LibraRisk app, which is available for mobile phones with iOS and Android operating systems.

10.6.10 Professional figures appointed for risk communication

Understanding who is authorized to communicate risks and emergencies is critical in identifying the entities responsible for disseminating information and combating uncertainty and misinformation. Not all Civil Protection plans have been successful in identifying such details. Among 20 municipalities analyzed with territories at high hydrogeological risk, there were four (Courmayeur, Ferentillo, Foggia, Termoli) where this information could not be found. In other municipalities, the mayor typically serves as the primary figure authorized to issue emergency communications, often supported by entities such as the municipal operational center, police forces, and civil protection. In three municipalities (Grosseto, Villacidro, Verbania), responsibility for this activity is assigned to officials in charge of mass media and information (Grosseto), telecommunications (Villacidro), and information systems and technical data (Verbania). Verbania explicitly mentions that the head of the press office can assist the official responsible for communication management.

This scenario also extends to municipalities that serve as regional capitals. In five of these municipalities (Turin, Palermo, Florence, Trento, Perugia), the provided information was insufficient to identify those designated to communicate risk and emergencies. The mayor is expected to lead this communication in the remaining municipalities, which are mainly supported by entities such as the municipal operational center or Civil Protection. Exceptions include Campobasso, where the municipal operational center is expected to handle communication, and Milan, which allows for appointing specific contacts for risk communication tailored to each scenario. The two regions analyzed exhibit similar patterns. Valle d'Aosta appoints the mayor as the primary figure for risk communication, while Sardinia supplements the mayor with the support of the municipal operational center.

It is noteworthy that all identified roles are administrative, respecting normative requirements. Thus, there is no provision for consulting experts who are part of the mayor's staff or have been given specific responsibilities for risk communication. This strategy is designed to maintain the decision-making authority of figures central to managing risks and emergencies. On the other hand, it underscores the lack of coordination and centralization of communication experts and professionals in designing risk and emergency management practices.

10.6.11 Training activities

Training civil protection personnel, as well as the population and staff of local authorities, is essential to providing an effective and coordinated response during crises and planning successful risk communication initiatives. Of the 41 civil protection plans analyzed, only two (Cortina d'Ampezzo and

Vibo Valentia) have explicitly stated the provision of training actions for volunteers and civil protection personnel. There is no training for local authority staff.

10.6.12 Partnerships with experts for targeted risk communication actions

The analysis explored whether the evaluated municipalities had engaged in collaborations or partnerships with expert entities to foster specific initiatives, such as enhancing risk communication efforts in partnership with local television broadcasters. If such activities were planned, they are not detailed in the Civil Protection plans. Four municipalities offer broad directives. The city of L'Aquila identifies external contacts within the telecommunications sector. Courmayeur highlights the possibility of implementing activities initiated by higher authorities aimed to foster awareness of the environment and Civil Protection. The municipality of Sermide and Felonica envisions partnerships with media channels, including the ANSA news agency and various newspaper and radio outlets. Lastly, the town of Urzulei recognizes Civil Protection as the expert entity capable of reassuring citizens.

10.6.13 Risk communication team

As with other aspects concerning the organizational framework of risk communication that depart from administrative matters, identifying the team tasked with risk communication has proven challenging. The documentation does not detail standard configurations of staff within the communication unit. This situation arises because, while there are explicit administrative responsibilities for managing risk-related processes, there is a significant degree of variability and unpredictability within administrations. This diversity impacts the role of communication within the organizations and how teams dedicated to it are formally established.

10.6.14 Indication of contacts of communication offices

For citizens, having the contacts of the staff in charge of the communication office is essential to reduce the possibility of engaging in behaviors that are not functional in the emergency and post-emergency. Moreover, in the preventive phase, contacts can be helpful to obtain further information. From the analysis of the Civil Protection plans, only eight present details on the contacts of the personnel in charge of communication in emergency conditions. For two plans (Foligno and Courmayeur) there is generic information and, therefore, not functional to the citizenry, who will, in any case, have to find contacts independently. For three plans (L'Aquila, Potenza, Rome), the contact information of the communication staff was detected. In other cases (Vibo Valentia, Ravenna, Trento), it was found that there was a contact of operators belonging to different functions and/or offices (e.g., telecommunications function, public relations office).

10.6.15 Devices for countering disinformation and misinformation

Disinformation under ordinary conditions and emergencies can have severe consequences and put citizens' lives at risk (Hassan & Pinelli, 2022). When disinformation spreads, it creates disorder and

confusion and undermines trust in the information system and institutions. From the 41 Civil Protection Plans analysis, no sections aimed specifically at describing tools or strategies intended for contrasting disinformation and misinformation emerge. This issue, however, emerges explicitly in six Civil Protection plans (Campobasso, Turin, Palermo, Aosta, Cagliari, Foligno). Some plans (Campobasso) see the accuracy of the messages and instructions provided as factors that strengthen the credibility of the alarm messages for the public. Others emphasize the importance of looking to legitimate sources of information, as written in the plan of the city of Turin. The plan clearly states that news in emergency conditions should be disseminated only if authorized by the Mayor or his delegate. Palermo and Aosta see the certainty of the content in the form of written communication so as not to give rise to interpretations or distortions.

11. Discussion and conclusion

The analysis of Civil Protection plans published by regions, regional capital municipalities, and a selection of municipalities with territories at high hydrogeological risk has shown that communication plays a marginal role compared to the specific technical information that can be identified in Civil Protection plans. The risk and emergency communication outlined by Civil Protection plans often has an informative purpose. Frequently, this detail in providing information translates into an instructional dimension (RQ1). Thus, administrations strive to guide the public on the territory, risks, and protective measures to be taken most transparently and effectively.

Regarding adherence to principles found in international guidelines (RQ2), the plans contribute to outlining administrative practices (also understood in a regulatory and bureaucratic sense) that concern the productive process of risk and emergency communication. Attention to content aspects and symbolism appears less developed.

For these reasons, Civil Protection plans – including those that pay more detailed attention to communication – cannot be appropriately considered a *communication plan* (RQ3). Assuming that the latter are documents of an applicative and operational nature, in the Civil Protection plans, we have not found detailed and replicable instructions that make the communication guidelines repeatable and transversal across administrations. While it is often clearly detailed who will be the preferred source in risk communication (the mayor), there is a lack of explicit and thorough guidelines on various aspects. Channels and messages are not targeted, and the audiences remain mostly generalist, without presenting solutions suitable for reaching narrower communities, such as citizens with mobility difficulties, those not self-sufficient, or even transient communities. Furthermore, elements that could constitute an editorial plan, replicable templates ready for use, and detailed and operational guidelines on message composition are missing.

The analysis of Civil Protection plans prompts several insights. A key observation is the distinction between regional capitals and smaller municipalities. One might initially assume that regional capitals, especially those designated as metropolitan cities, would outline more structured communication activities in their Civil Protection plans. However, despite identifying a few systematic differences, mainly in detailing general and technical aspects within the documents, no significant disparities in the presentation of communication activities were noted. This is despite the expectation that regional capitals might have access to more significant resources (both staff and budget) for planning communication activities.

Furthermore, the analysis revealed that Civil Protection plans are primarily seen as formal and bureaucratic operational tools. They are not intended as educational or dissemination tools. Risk socialization activities can be found in documents other than Civil Protection Plans, such as brochures or information sheets. Rarely, Civil Protection plans describe initiatives aimed at community engagement.

Investments by local governments in converting the details within Civil Protection plans into accessible documents and initiatives designed to inform the public about emergency management strategies could significantly elevate awareness of risks and their management strategies. Additionally, it could enhance the publics' understanding of local territories and the role of the authorities.

The distinctly technical nature of the analyzed documents leads to plans primarily focusing on internal processes. They elaborate on organizational aspects and administrative functions but do not provide clear directives regarding the contents of risk communication or the processes affecting external interactions, such as media management or coordination with external institutions and actors.

This observation suggests a significant role for the templates provided by regional and national guidelines, which influence the content and information included in the plans. Thus, more specific documents on managing risk and emergency communication may exist. Still, these might be for internal use or tied to the individual staff of each administration, who handle both internal and external communications for municipal structures.

It should also be noted that nearly all plans address multi-hazard scenarios and/or include demographic information. This data could enable the differentiation of practices, tools, and targets. Yet, the limited risk communication strategies that emerge from the plans tend to be generic and undifferentiated, reflecting a broad absence of communication guidelines beyond administrative issues. This raises several questions: Who is responsible for managing social media? How should emergencies outside regular working hours be handled? To what extent are municipal employees who manage emergencies informed about the risks?

Additionally, there's a noticeable lack of detailed partnership strategies and potential training for operators handling risk communication and emergencies. Despite a prevailing preference for the broadcast use of communication channels, there is a need to assess the media management skills of those responsible for communication in small and larger municipalities. Without adequately structured and formalized training, can it be ensured that the competencies available within administrations are adequate for effectively managing emergencies?

Regarding emergency preparedness, it is important to highlight that the plans rarely emphasize prevention (occasionally mentioning phrases related to fostering a *culture of Civil Protection*) or establishing bidirectional relationships that could foster trust or active engagement in local risk management and promoting self-protective behaviors. Instead, the analysis of the plans often shows a predominant focus on the aspect of emergencies, which, by their nature, necessitate practices that are codified, reliable, and universally accepted by the entire team.

Lastly, it is crucial to consider the role of digital media. Examining the plans reveals a perspective on communication methods rooted in pre-digital paradigms, which is consistent with Law 150/2000. Social network sites and social media are rarely incorporated into the communication strategy. The lack of public and accountable policies and guidance on their usage points to a stage of *not full maturity* (Mergel & Bretschneider, 2013) regarding public administrations' adoption of these communication tools, particularly concerning risk communication.

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