COVINFORM

CORONAVIRUS VULNERABILITIES AND INFORMATION DYNAMICS RESEARCH AND MODELLING

D7.4 Synthesis and lessons learnt on communication, information and misinformation

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Authors	**Viktoria Adler**, SYNYO **Diotima Bertel**, SYNYO **Su Anson**, TRI
Contributors	**Marina Ghersetti**, UGOT **Bengt Johansson**, UGOT **Elena Ambrosetti**, SAPIENZA **Dasha Ilic**, MDI **Gloria Anderson**, UCSC
Reviewers	**Niamh Aspell**, TRI **Zainab Mehdi**, TRI

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Executive Summary

This deliverable provides a synthesis and interpretation of the findings of previous tasks of work package (WP) 7, based on the theoretical framework established in WPs 2 and 3, i.e., Complex Systems Theory (Ostrom 2007). This is aligned with a theoretical reflection on risk and crisis communication, particularly the Risk Governance Framework (IRGC, 2017), which outlines questions to address when developing communication, and the Protective Action Decision Model (PADM) (Lindell & Perry 2012). Relating these theoretical models/frameworks to the Ostrom (2007) Systems Model, we visualise how Ostrom's 2007 model is a relevant theoretical framework to compare the communication approaches of the ten COVINFORM countries: Austria, Belgium, Germany, Greece, Italy, Portugal, Romania, Spain, Sweden, and the UK.

We propose an approach that analyses COVID-19 risk communication through the lens of complex adaptive system theory. This approach helps us to understand the relationships between various components influencing risk communication. Further, we could identify similarities and differences amongst the ten countries under research. In the next iteration of this deliverable, this will be extended by (a) further timespans, and (b) insights from the empirical research conducted in WP7, particularly research with vulnerable groups.

Through our comparative analysis, we could identify that most countries used a centralised top-down communication approach. The main actors were government officials such as Prime Ministers and Presidents as well as Health and Interior Ministers. In some countries, National Crisis Centres and Public Health Institutes took on an important role in the coordination and delivery of COVID-19 risk communication. In all countries under research, risk communication followed a multi-channel strategy, including social media and press conferences. Looking at the means of communication, we can see that COVID-19 risk communication was predominantly conducted in a one-way and top-down approach. Awareness-raising campaigns were often used to communicate behaviour change to the public. Two-way channels we could identify were, for example, hotlines some countries set up.

In some countries, NGOs played a crucial role in risk communication, particularly in relation to vulnerable groups. Most governments adopted their general risk communication campaigns, to some degree, so that they would speak to vulnerable groups. In many instances, this was done by translations or the adaption of certain texts into easy language.

In general, communication barriers were similar across all countries under research. Language and cultural barriers were often mentioned, contributing to dis-and misinformation. Lack of trust, particularly in those countries where low trust in the government already existed prior to the pandemic, also played a negative role in risk communication.

This deliverable concludes with some lessons learned in relation to five key points: 1.) accessible and inclusive communication, 2.) actionable communication, 3.) trusted and credible communication, 4.) relevant and timely communication and finally, 5.) understandable communication.

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Acronyms & Abbreviations

Term	Description
CSO	Civil Society Organisation
SES	Social-Ecological System

1 Introduction

This deliverable provides a synthesis and interpretation of the findings of previous tasks of work package (WP) 7, based on the theoretical framework established in WPs 2 and 3, i.e., Complex Systems Theory (see Ostrom 2007). This is aligned with a theoretical reflection on risk and crisis communication, particularly the Risk Governance Framework (IRGC, 2017), which outlines questions to address when developing communication, and the Protective Action Decision Model (PADM) (Lindell & Perry 2012). Relating these theoretical models/frameworks to the Ostrom (2007) Systems Model, we visualise how Ostrom's 2007 model is a relevant theoretical framework to compare the communication approaches of the ten COVINFORM countries.

Building on this theoretical framework, we are suggesting a model that allows us to understand risk and crisis communication as a complex system. Based on this model, we conduct an analysis of communication approaches and identify COVID-19 (risk) communication approaches used from the emergence of the virus in Europe in January/February 2020 to January 2021. The data used for this analysis was collected through desk-based research. The analysis is focused on risk communication in ten countries: Austria, Belgium, Germany, Greece, Italy, Portugal, Romania, Spain, Sweden, and the UK.

In this deliverable, we propose an approach that analyses COVID-19 risk communication through the lens of complex adaptive system theory. This approach helps us to understand the relationships between various components influencing risk communication. Further, we could identify similarities and differences amongst the 10 countries under research. In the next iteration of this deliverable, this will be extended by (a) further timespans, and (b) insights from the empirical research conducted in WP7, particularly research with vulnerable groups. The document further contributes to an identification of practices and aligns them with recommendations for effective and inclusive risk communication.

Besides building on the previous tasks of WP7, this deliverable is closely related to WPs 2 and 3. It also makes use of insights from WP4, particularly T4.1, which has identified the government structure in each of the countries under research.

2 Theoretical framing

COVINFORM uses two main theoretical approaches: intersectionality theory and complex systems theory. While the former acknowledges the interconnectedness of factors that shape experiences during the pandemic, the latter provides the theoretical framework that allows comparison across the different case studies and WP-level empirical research. Both approaches help to grasp simultaneous and multiple social inequalities.

This chapter provides an overview of the theoretical framing used in this deliverable. First, we describe the complex systems theory by Ostrom 2007 which we have applied in our suggested COVID-19 risk communication model. Second, we provide an overview of theoretical approaches to crisis and risk communication and how it relates to the Ostrom model.

2.1 Complex systems theory (SYNYO)

COVINFORM follows the systems model defined by Ostrom (2007), which allows for describing a system and understanding the dynamics of each of the sub-systems using eight basic variables. These

variables need to be developed according to the social-ecological system (SES) chosen — in the context of this analysis, that is the COVID-19 communication system. This system is in connection with other, larger or smaller systems (panarchy) (Allen et al. 2014). The systems framework allows us to identify a set of rules of functioning, including tipping points, adaptation, negative and positive feedback, etc. This is due to the systems' non-linear nature.

Figure 1 below shows the basic factors that can be used to describe the systems (Ostrom 2007). In this model, all systems can be described through the same variables, namely: resource units and a resource system, the users, the governance, the interaction between the resource systems, the users and the governance system, and the outcomes. The dynamic of these factors and the influence of larger and smaller systems provide information on the evolution of the system.

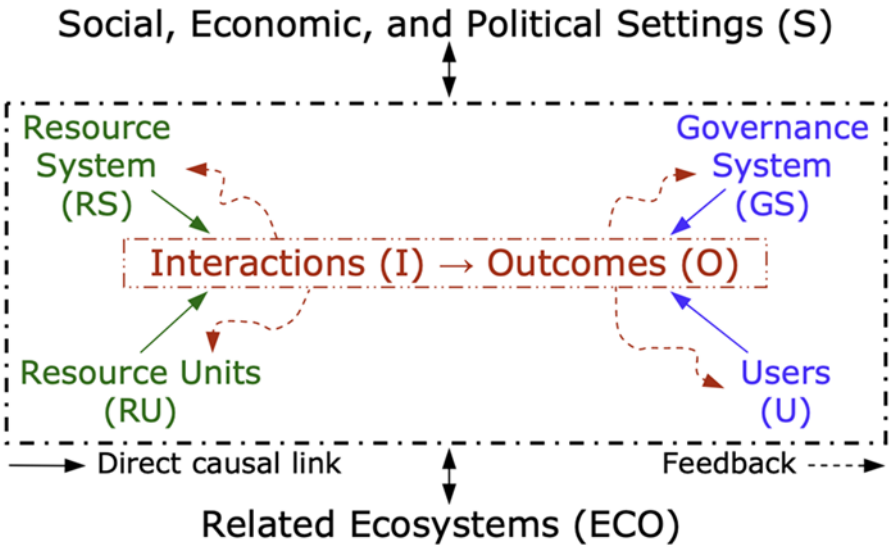

Figure 1. Multi-Tier Framework - Socio-Ecological Systems (Ostrom 2007)

In the following, we briefly describe the systems used for the analysis of this deliverable.

2.1.1 Governance Systems (GS)

According to Ostrom (2007), the governance system can be described as the government and non-government organisations, the network structure, the property-rights system, operational rules, constitutional rules, and monitoring and sanctioning processes.

For our model, we define the governance system as the way communication is structured in the countries under research, that is, the responsible organisations involved in risk communication such as the government, public health organisations and officials, experts, representatives of Civil Society Organisations (CSOs) and Non-Governmental Organisations (NGOs), etc., and the management of their communication. Furthermore, we look at responsibilities in relation to communication, structures and operational rules, as well as the balance of responsibility and coordination of messaging. This contributes to an understanding of the dynamics of the communication environment.

2.1.2 Resource system and units (RSU)

According to Ostrom, resource systems can be described as the sector, the system boundaries, size, human-constructed facilities, productivity, equilibrium properties, predictability of its dynamics, its storage characteristics, and its location. Resource units can be defined by their mobility, growth or replacement rate, interaction among units, their economic value, size, distinctive markings, and spatial and temporal distribution. For example, a resource system describes the sector which may be a fishery, lake or grazing area, while the resource unit is generated by the system and may be fish, water, or fodder (Ostrom 2007).

In the context of our model, we focus on the resources available for communication at the organisations responsible for communication (identified under the GS), such as pre-existing risk communication plans in the countries under research, as well as the size of communication departments and available means of communication (such as channels). The resource units are the number of communication actors and the number receiving the communications. However, due to a lack of reliable data, these indicators will not be considered in this deliverable.

2.1.3 Actor Systems (A)

The actor system refers to the stakeholders involved. It can be described as the number of users and their socioeconomic attributes, the history of use, location, leadership/entrepreneurship, norms, mental models, dependence on recourse, and technologies used.

In our model, we focus on (a) the (official) communicators, and (b) their target audience(s), while taking into account that good risk communication follows a two-way approach; and that we have to understand all involved groups as both communicators and recipients of information. The communicators include government actors who worked in collaboration with Public Health Experts, Epidemiologists, Virologists and other Data Experts, to both inform and deliver COVID-19 communication. Looking at target audiences, we focus in particular on vulnerable populations and various indicators of (communication) vulnerability.

2.1.4 Interaction Area (I)

The interaction area can be described, according to Ostrom (2007), by the levels of diverse users, information sharing among them, particularly activities, strategies, and initiatives, deliberation processes, conflicts among users, as well as investment and lobbying activities.

In our model, we focus on the content of communication, barriers, as well as protests against the communicated content and measures. Further included is the implementation of strategies set out in communication plans identified in the context of the RSU, as well as the ways in which communication plans were implemented and operationalised. The interaction area is strongly influenced by the norms set by the governance system.

2.1.5 Outcomes

Following Ostrom, outcomes can be described by social and ecological performance measures, as well as externalities to other SESs. For our model, we focus on the outcomes of crisis communication, such as increased trust and behaviour change. Furthermore, we look at social and ecological performance measures, and impacts such as case rates in communities. We further suggest a set of indicators that help to measure effective risk communication (see chapter 4). We consider this in terms of the

interplay between the other systems. The outcomes are crucial to informing the lessons learned regarding risk communication.

2.1.6 Timeframe

A system tends to follow an adaptive cycle where certain internal or external factors can change the phase (Walker et al. 2004). Importantly, time cannot be understood as a linear progression in the system context but must be considered in phases. In our model, we can identify the following timeframes: pre-crisis, first & second wave, vaccination - post-vaccination - post-crisis (the last one being a future, but expected phase).

The following figure depicts the suggested model.

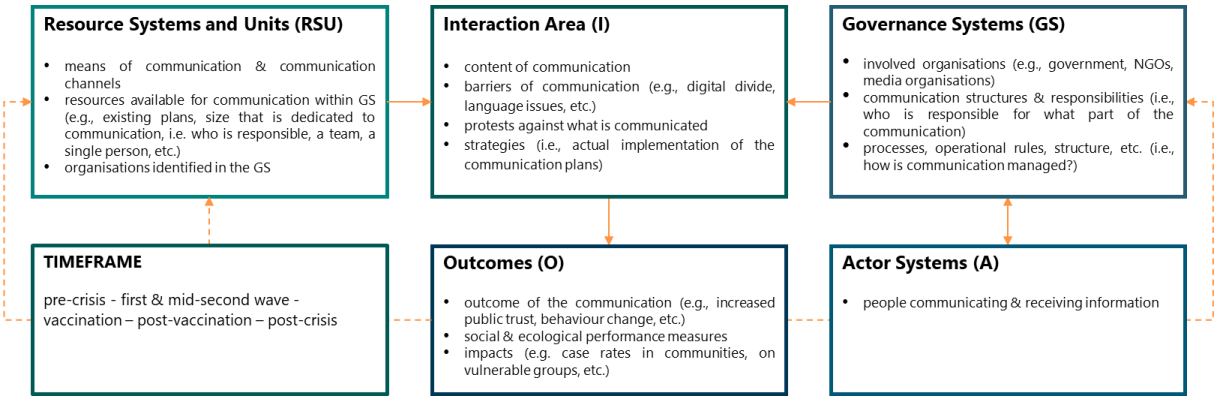

Figure 2. COVID-19 communication model

2.2 Risk and crisis communication

As outlined in D7.3 Analysis: Communication and information, in regards to the COVID-19 pandemic, communication is crucial in terms of helping the population comprehend the risks of COVID-19 and suggested recommendations (e.g., safeguarding their health and restricting the spread of the virus). Communication includes both risk and crisis communication. The World Health Organization (WHO, n.d) outlines how in relation to public health emergencies, “risk communication includes the range of communication capacities required through the preparedness, response and recovery phases of a serious public health event to encourage informed decision making, positive behaviour change and the maintenance of trust”. While risk communication is ongoing and focuses on all phases of a public health emergency, crisis communication is reactive and occurs in response to an unforeseen event. While the timing of risk and crisis communication may differ, they are both concerned with the dissemination and exchange of information. For the remainder of this deliverable, the term ‘risk communication’ will be used in relation to both risk and crisis communication.

2.2.1 Risk Governance Framework

The International Risk Governance Council (IRGC, 2017) has developed a Risk Governance Framework that provides an “inclusive approach to frame, assess, evaluate, manage, and communicate important risk issues, often marked by complexity, uncertainty and ambiguity”. The framework is adjustable, and can be personalised to numerous risks and organisations. Transparent and inclusive communication is highlighted as cutting across and being at the core of the Framework and being critical to effectively governing risk (IRGC, 2017). The IRGC (2017) highlights how:

"[Communication] empowers stakeholders and civil society to understand the risk and the rationale for risk management (external communication). It allows stakeholders to make informed contributions to risk governance, recognises their role in the risk governance process and gives them a voice by creating a deliberate two-way process" (p.27).

The IRGC (2017) outlines different questions to address when developing communication that can be considered in relation to Ostrom's (2007) systems model outlined in Section 2.

Table 1. IRGC questions related to the Ostrom Systems Model

Questions to address when developing communication (IRGC, 2017, p.27-28)	Related element/s from Ostrom's 2007 Systems Model
"Is there a facilitator in charge of the risk communication process?"	Governance Systems
"How can communication be facilitated between risk-takers, risk affected parties, other stakeholders, the media and risk managers (external communication)?"	Governance Systems, Resource Systems and Units
"How can communication be organised so that two-way information is effective, enlightening and timely?"	Interaction Area
"What is known about the risk and the hazard, by whom, and how can it be conveyed to the interested stakeholders and the public?"	Interaction Area
"Does the communication take into account how the risk is perceived by the stakeholders?"	Interaction area/ Outcomes
"Are there ambiguities and controversies about the risk within the public sphere?"	Interaction Area (e.g., barriers)
"What is the degree of confidence in the risk managers responsible for generating or disseminating information, and for organising a dialogue?"	Interaction Area (e.g., barriers), Outcomes
"How to deal with confidential and sensitive information?"	Interaction Area
"What are the demands, needs and purposes for information and communication among the different stakeholder groups, including members of the general public?"	Actor Systems
"Are the concerns of stakeholders and the public being clearly articulated and are decision-makers listening?"	Resource Systems and Units. For example, are two-way communication channels being used to understand and listen to the concerns of stakeholders and the public?
"How is information interpreted by those who receive it?"	Outcomes
"What has been and can be the role of the media, both traditional and social?"	Interaction Area

"Is there a facilitator in charge of the risk communication process?"	Governance Systems
"How can communication be facilitated between risk-takers, risk affected parties, other stakeholders, the media and risk managers (external communication)?"	Governance Systems, Resource Systems and Units

The link between all components of Ostrom's 2007 model and the IRGC questions to address when developing communication highlights how Ostrom's 2007 model is a relevant theoretical framework to compare the communication approaches of the ten countries. The next section outlines how Ostrom's 2007 model also relates to a theoretical risk communication framework, the Protective Action Decision Model (Lindell and Perry).

2.2.2 The Protective Action Decision Model (PADM)

The PADM devised by Michael K. Lindell and Ronald W. Perry is a multiphase model that is based on conclusions from research on individuals' reactions to environmental hazards and disasters (Lindell & Perry 2012). The PADM is composed of different factors that "influence individuals' adoption of protective actions" and has been applied to the development of risk communication programs (Lindell and Perry, 2012, p.616). The decision to take protective action is triggered by the information received from risk communication and/or environmental cues (Lindell & Perry 2004). Lindell and Perry (2004) outline how for Lasswell (1948) "all communication should be analysed in terms of who (Source) says what (Message), via what media (Channel), to whom (Receiver), and directed at what kind of change (Effect)" (14). In terms of risk communication, the PADM includes information sources, channel access and preference, warning messages, and receiver characteristics (Lindell and Perry, 2012). These elements can be considered in relation to Ostrom's (2007) model with information sources being related to Governance Systems and Actor Systems, channel access and preference being related to the Resource Systems and Units and Actor Systems, warning messages being related to the Interaction Area, and receiver characteristics being related to the Actor Systems. The PADM acknowledges that while information may be sent to stakeholders via risk communication and/or environmental cues, they may not receive it, pay attention to it, or understand it (Lindell & Perry 2012). Thus, risk communication itself may not result in behaviour change.

While the relationship between risk communication and behaviour change is complex, due to the variety of different factors that influence behaviour change, D7.3 highlighted recommendations for effective communication strategies which are summarised in Figure 3.

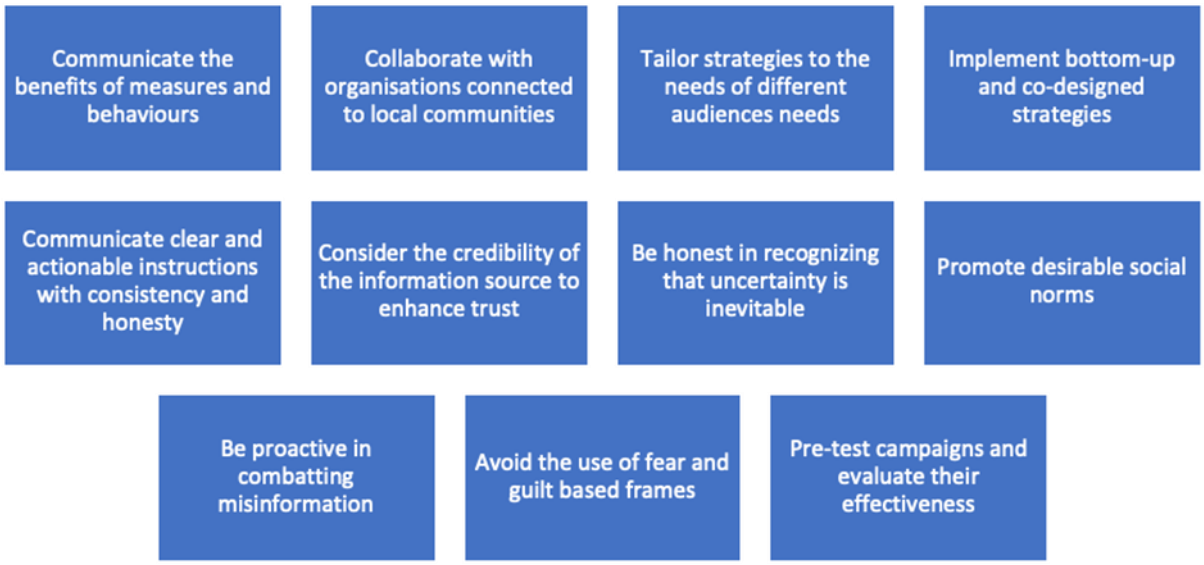

Figure 3. Effective Communication Strategies

3 Communication approaches

This chapter presents an analysis of the COVID-19 communication approaches following the above-described model. The timeframe we focus on in this analysis encompasses the first to mid-second wave, i.e., from January/February 2020 until January 2021.

3.1 Austria

Austria is a federal parliamentary republic, giving its states/provinces broad autonomy. The executive power is exercised by the Federal Government, on a national level, and by Local Governments, on a local level. The country is divided into nine provinces, whose governments have great autonomy, and abide by the principles of a representative democracy (see *D4.1 Baseline Report: Communication and Information*).

During the timespan under analysis, communication regarding the COVID-19 pandemic in Austria was mainly conducted by four actors of the Federal Government: the Chancellor and Vice-Chancellor, the Minister of Health, and the Minister of Interior. Due to this structure, we can describe Austria's COVID-19 communication approach as somewhat ***centralised.*** Furthermore, it is a communication approach that is ***personalised*** in the sense that communication is conducted by a few selected actors, who communicated via press conferences and other formal channels, but also via their personal social media profiles.

Another relevant observation is the ***important role of the Austrian Red Cross*** in the communication activities: the two main communication campaigns ('Schau auf mich, schau auf dich', 'Österreich impft') and the contact tracing application. Other NGOs and CSOs such as Caritas, Integration House, and the AIDS House played an important role in providing specialised information to their particular groups or clients. As such, ***direct communication to vulnerable groups*** (such as migrants) was ***outsourced to specialised organisations***. The main public health organisation, the Agency for Health

and Food Safety (Agentur für Gesundheit und Ernährungssicherheit, AGES), was ***not an active nor visible communicator***, but provided data and information, as well as medical advice.

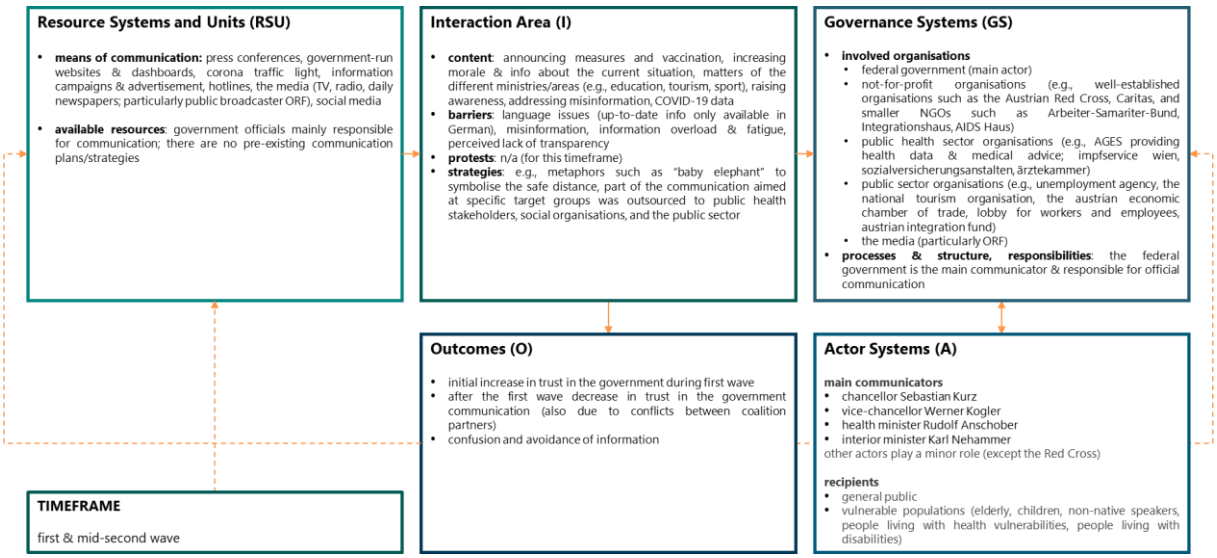

Figure 4. Austria's COVID-19 Communication Approach

3.2 Belgium

Belgium operates under the framework of the federal political system, with its five regions enjoying a high level of autonomy. Belgium is a constitutional representative monarchy, where the King is the Head of State. On a national level, the executive branch consists of the Head of Government (Prime Minister) and the Council of Ministers, as well as the State Secretaries. Locally, the five Belgian "federated entities" also have Governments but differentiate from the central one in terms of responsibilities (see D4.1). In Belgium, the governmental organisation in charge of crisis management is the National Crisis Centre (NCCN), which is part of the federal government service for Internal Affairs. As federal, regional, provincial, and municipal leaders each have their own mandates and responsibilities in Belgium, it can be challenging to communicate a unified message across administrative layers in crisis situations (Derison, 2020). In March 2020, it was therefore decided Belgium would enter a 'federal phase', in which coordination and communication regarding the COVID-19 pandemic would occur at a federal level, carried out by the NCCN. Inter-ministerial conferences facilitated communication between federal and regional levels (see D7.1).

Belgium also followed a ***centralised communication approach*** as the communication about the measures was coordinated by the Information Unit, which is jointly chaired by the Federal Public Service Health (FPS Health) and the NCCN. In October 2020, Belgium nominated its first ***Coronavirus Commissioner***, Pedro Facon, Director General for Health at Belgium's Federal Public Service Health (FPSH). The COVID-19 Commissioner should help coordinate the fight against the virus which also includes the COVID-19 risk communication. In theory, there was a separation between the government communication about measures, and public health communication about COVID epidemiological information. On the one hand, new COVID-19 rules and measures passed at the federal level were communicated through press conferences organised by the federal government. On the other hand, figures on numbers of COVID-19 cases, hospitalizations, deaths and other relevant data were

communicated in separate press conferences by a joint team from FPS Health, the NCCN, and Sciensano (the national public health institute of Belgium).

The NCCN has been collaborating with different organisations in efforts to make government communication during the COVID-19 pandemic more ***accessible to vulnerable groups*** in society. On a number of occasions, communication with vulnerable groups occurred at the community level through social services, other local government services, and local non-profit organisations (see D7.1).

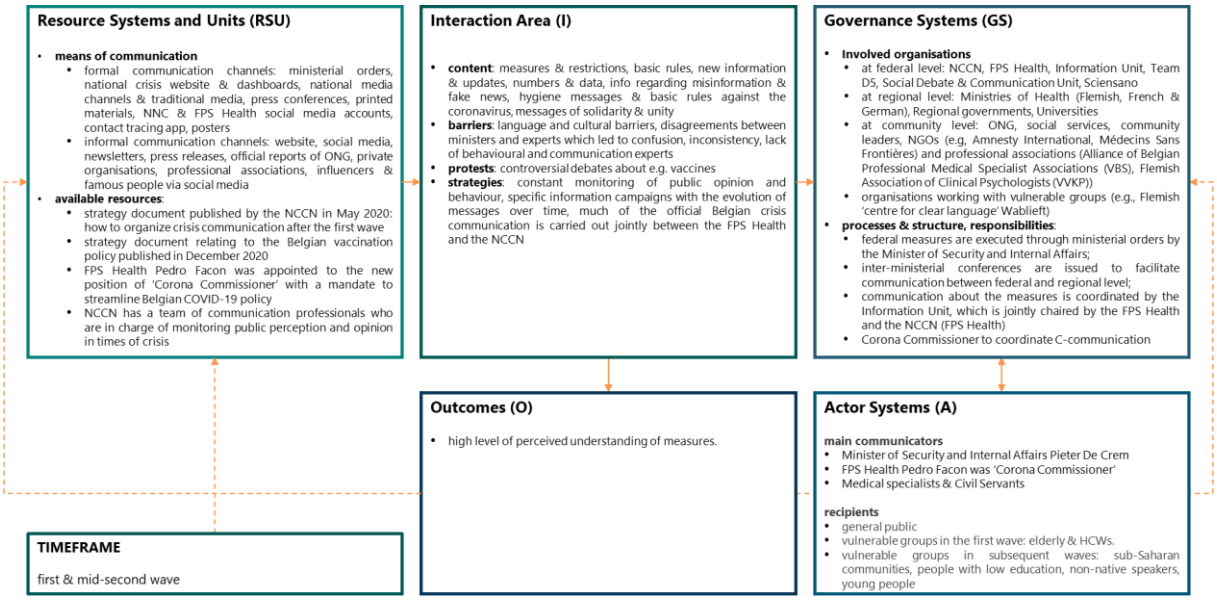

Figure 5. Belgium's COVID-19 Communication Approach

3.3 Germany

Germany has a multi-layered administration regarding the governance of the State. On a national level, Germany has abided by the federal parliamentary democracy model. Germany's executive branch is composed of the Federal President, the Federal Chancellor, and the Cabinet. Note that the Federal President's (who is the head of State) main duties, but are not limited to, include representing the Federal Republic of Germany in matters of international law and to sign all federal laws before they can be applied (*see D4.1 Baseline Report: Communication and Information*).

In 2020, the German communication approach was defined at the federal level, and was repeatedly altered over the course of the pandemic. The governmental strategy implemented was ***multi-channel***, i.e., governmental press releases, and informational website updates, eventually amplified by precise, insightful print and digital communication campaigns (e.g., the use of hashtags on social media).

In February 2020, the ***AHA-Formel*** was adopted by the government. To advertise simple risk mitigation measures and advance their approval, the AHA-Formel came to represent the following:

- „Abstand halten" – "keep a safe distance"
- „Hygiene-Maßnahmen beachten" – "pay attention to hygiene measures"
- „Alltagsmaske tragen" – "wear a mask on an everyday basis"

By the 2021 spring period, the AHA-Formel remained the key government communication measure, and was eventually developed to represent the ***AHA+L+A-Formel***. Additional features added include the following:

- „Lüften“ – “ventilate”
- „App benutzen“ – “use the (contact-tracing) app”

As the pandemic progressed, we identified the federal government taking into account the ***psychology of risk***. In order to strengthen public awareness of the risks affecting the population (especially vulnerable communities), communication focused less on case mortality statistics and more on true stories of sufferings witnessed by a wide range of civilians. To communicate such stories, shock effects were adopted to emphasise real-life experiences. Shock effect examples include permanent lung damage and children as a source of infection for the death of parents. Mindful of individuals' mental health, however, communication of such stories were presented in a composed and unbiased way, without causing panic.

Following the WHO recommendation of implementing culturally sensitive messages[1], we further identified the ***use of humour and idioms*** in a number of German campaign posters, especially in Berlin. Whilst there was criticism from centre-right politicians, others praised this communication approach. For example, the local newspaper Tagesspiegel commended the posters for addressing the urgency and seriousness of the COVID-19 pandemic.[2]

Similar to Sweden, Germany's COVID-19 communication also considered ***multilingual and multicultural support***. When addressing misinformation, for example, multilingual videos were produced to squash myths and conspiracy theories associated with the COVID-19 virus and vaccines. Videos were made available in Turkish, Arabic, Romanian, and German. As is known, some of the different languages presented here represent Germany's multicultural make-up.

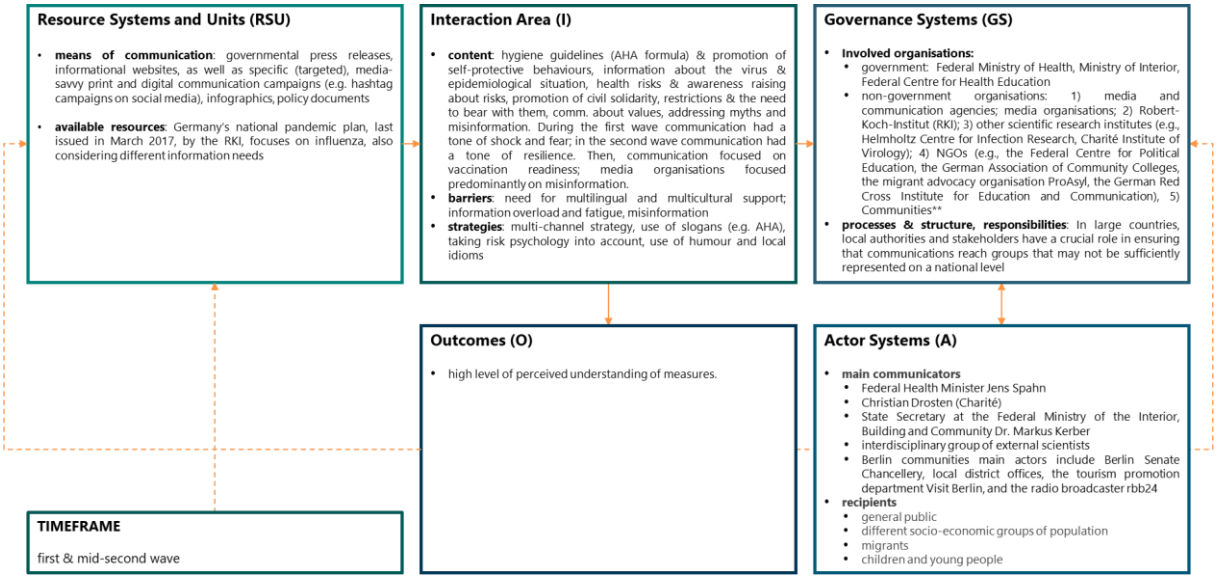

Figure 6. Germany's COVID-19 Communication Approach

[1] World Health Organization. n.d. *WHO Strategic Communications Framework*. [online] Available at: https://apps.who.int/dco/strategy/en/ [Accessed 29 April 2022].

[2] The Guardian. 2020. *Berlin gives middle finger to anti-maskers in tourism agency ad*. [online] Available at: https://www.theguardian.com/world/2020/oct/14/berlin-gives-middle-finger-to-anti-maskers-in-tourism-agency-ad [Accessed 27 April 2022].

3.4 Greece

Greece, officially the Hellenic Republic, is a Presidential Parliamentary Republic. The Head of State is the President. The President of the Government is the Prime Minister, who is the second-in-class state institution following the President of the Republic (see D4.1).

Risk communication in Greece in the first until mid-second wave can be described as a ***centralised and top-down approach***: the government was mainly responsible for the development of the communication strategy; the main organisation in communicating was the National Public Health Organization (EODY), which acts under the supervision of the Minister of Health. The primary organisations involved were the Hellenic Ministry of Health, the General Secretary of Civil Protection, and the Hellenic Ministry of Citizen Protection. Communication was conducted mainly via daily or weekly press conferences. Moreover, the Head of the Expert Committee on Infectious Diseases, who was appointed to combat COVID-19, served as the ***spokesperson for the Ministry of Health***.

We can further observe collaboration with international (e.g., WHO, IOM, UNHCR, Médecins Sans Frontières) and national (e.g., Stavros Niarchos Foundation, Oloi mazi mporoume, PRAKSIS) organisations. These organisations provided information to their respective clients, such as migrants and refugees and other vulnerable groups. As such, we can observe the ***outsourcing of communication to vulnerable groups to specialised organisations.***

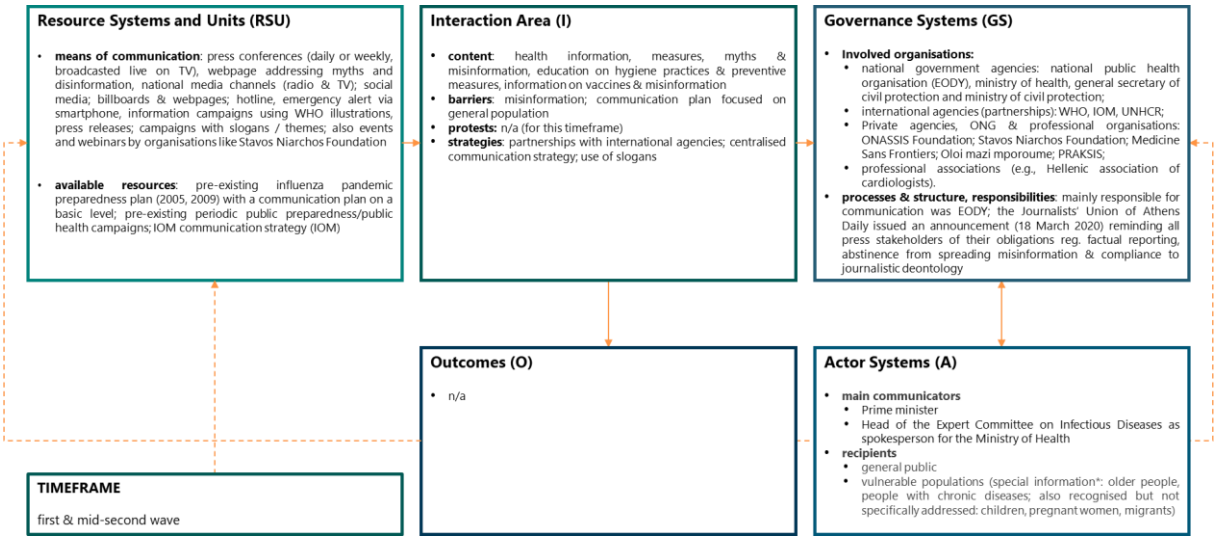

Figure 7. Greece's COVID-19 Communication Approach

3.5 Italy

Italy is a democratic parliamentary Republic with a three-way division of power. Executive power is exercised by the Council of Ministers, legislative power is vested primarily by the Parliament, and the judiciary power is independent. The State has powers of control - subjected to constitutional limitations - over fifteen ordinary regions, four regions and two provinces with special autonomy. The regional government is composed of the regional council that has the power to pass laws and issue administrative regulations; the regional committee, with executive power; and the president of the regional committee (D4.1). In Italy, there was a ***formal communication strategy*** adopted to communicate about the pandemic. However, it was not made explicit in an official document by the Italian Government during the period of the first wave (February-May 2020).

Communication about the content of the government's measures regarding the containment of the epidemic (state of emergency, lockdown, controls at borders, etc.) was provided directly by the Italian Prime Minister. Other important federal institutions involved in the COVID-19 communication were the Presidency of the Council of Ministers (PCM), Ministry of Health (MOH), the Italian National Institute of Health (ISS) and the Technical Scientific Committee (CTS), Civil Protection as well as other government officers and institutions. For example, the evolution of the epidemic through the main data was communicated via a ***daily press conference*** by the Civil Protection together with the ***most important national health authorities***: the Ministry of Health (MOH), the Italian National Institute of Health (ISS) and the Technical Scientific Committee (CTS).

Since the beginning of the health emergency, data on the evolution of the pandemic were also made available by the Ministry of Health and the Civic Protection. Additionally, the Presidency of the Council of Ministers (PCM) launched a ***series of communication campaigns*** encompassing television and radio commercials and a plurality of initiatives such as apps, dossiers and information materials tailored to a variety of social groups, dedicated telephone numbers, infographics and websites dedicated to Covid-19 and regularly updated.

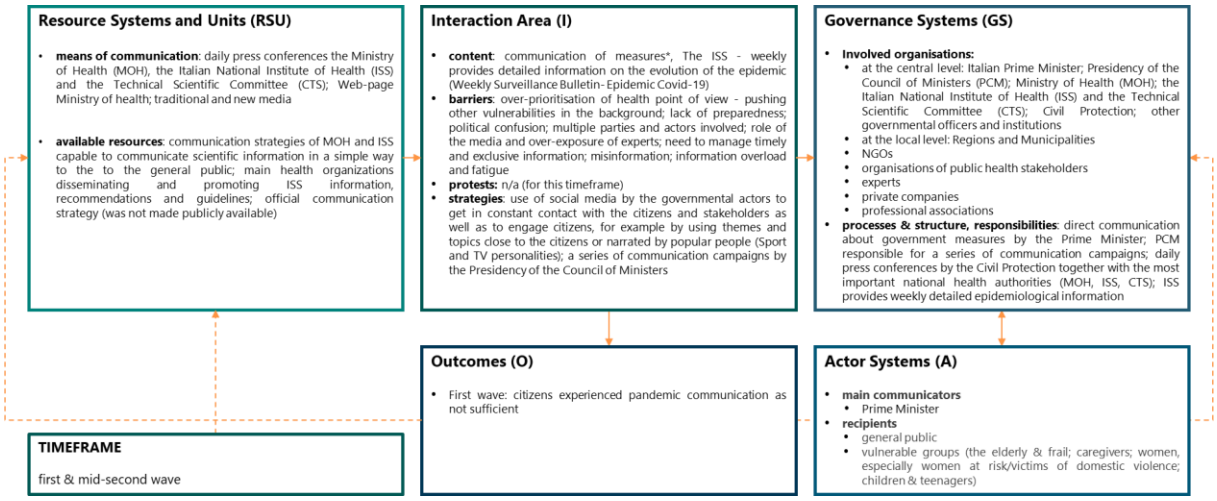

Figure 8. Italy's COVID-19 Communication Approach

3.6 Portugal

Portugal is a semi-presidential democratic republic. On a national level, the executive branch is composed of the President, who is the head of state, the Prime Minister, also serving as head of Government, and the Council of Ministers, along with the State Secretaries. On a local level, Portugal is divided into 20 administrative regions that each have its own Governor. Even though the Portuguese regions do not have the autonomy of Austria's Provinces or Belgium's "federated entities", two out of the 20, Madeira and Azores, are autonomous, having their own Governments, while being under the framework of the Portuguese Republic (see D4.1).

In Portugal, we observed a dedicated attitude to ***developing pre-existing pandemic plans*** to be used during the COVID-19 pandemic. Indeed, the plan that was developed was the 2007 influenza pandemic plan. Advanced by public health stakeholders, that is the Ministry of Health and the General Department of Health (alongside national experts as well) to be exact, three key documents identified when engaging in COVID-19 communication include:

- "Princípios orientadores para comunicação de riscos e crise baseados na percepção de risco" (Guiding principles for risk and crisis communication based on risk perception).
- "Plano Nacional de Preparação e Resposta à Doença por novo coronavírus (COVID-19)" (National Plan of Preparation and Response for Disease of the New Coronavirus (COVID-19).
- "Plano da Saúde para o Outono-Inverno 2020-21" (Health Plan for the Autumn-Winter 2020-21).

In terms of governmental communication, we identified the Prime Minister and Council of Ministers (especially the Minister of Health) as the main communicators. Focusing on the latter, the Council of Ministers engaged in weekly discussions with the public. With this in mind, an important development noted during the COVID-19 outbreak in Portugal includes ***strengthened government engagement with the public***. For example, information was constantly uploaded on the government's website about what measures are being put in place to manage the COVID-19 outbreak. In addition, consistent information regarding the COVID-19 vaccination was frequently updated (*see D7.1 Baseline Report: Communication and Information*).

Communication efforts also included ***supporting vulnerable communities***. Despite a lack of specific communication for vulnerable populations, the government did frequently communicate their commitment to support such communities (*see D7.1 Baseline report: Communication and Information*). That said, community initiatives identified specifically supporting disadvantaged communities include a youth volunteering initiative. For example, the Portuguese Institute of Sports and Youth (IPDJ), in collaboration with the National Association of Parishes (ANAFRE), developed a volunteering action called "Greater Support."[3] Comprising approximately 150 volunteers, the project tasks of this volunteering action include assisting with the dissemination of food and medicine, offering advice on public support services, telephone or digital distribution of health support programs, etc.[4] Public health stakeholders also played a role in supporting vulnerable communities.

Regarding organisation communication response to the pandemic, particular attention was paid to addressing ***societal issues linked directly to the COVID-19 pandemic***. For example, Ordem dos Psicólogos Portugueses - OPP (Order of the Portuguese psychologists), issued articles highlighting COVID-19 and isolation. Similarly, Ordem dos Medicos (Portuguese Medical Order) published two articles within the "Choosing Wisely Portugal" program, helping promote health choices based on scientific evidence. Autoridade para as Condições de Trabalho - ACT (working conditions authority) also addressed safety in the workplace.

[3] Portugal.gov.pt. n.d. *Jovens voluntários integram projeto nacional de apoio comunitário*. [online] Available at: <https://www.portugal.gov.pt/pt/gc22/comunicacao/comunicado?i=jovens-voluntarios-integram-projeto-nacional-de-apoio-comunitario> [Accessed 28 April 2022].
[4] Ibid.

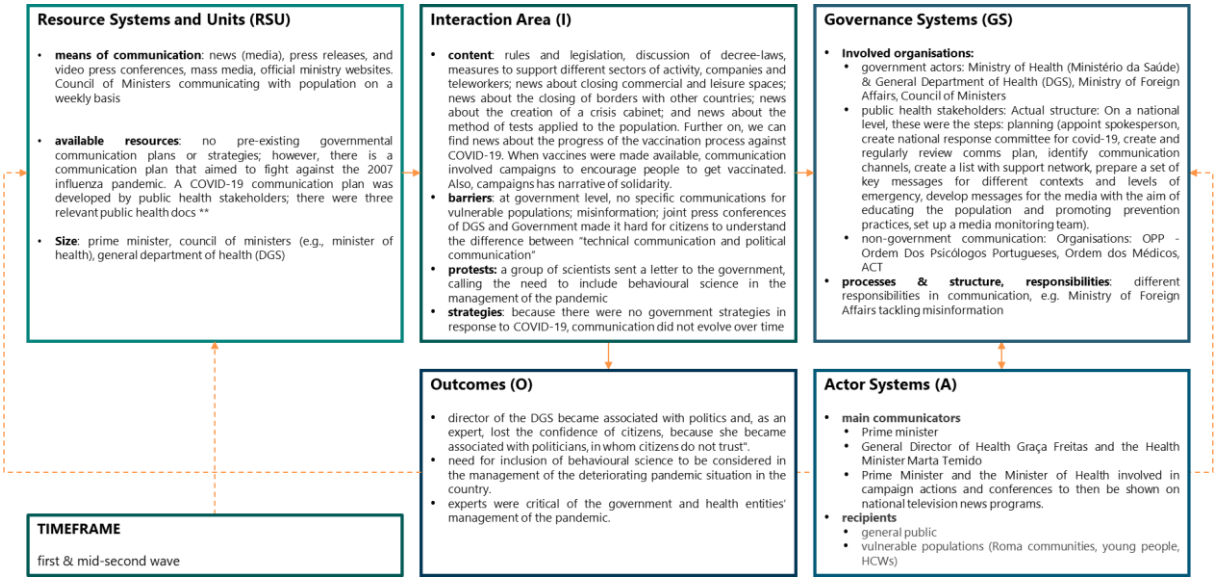

Figure 9. Portugal's COVID-19 Communication Approach

3.7 Romania

The Romanian government is a Parliamentary Republic with a semi-presidential regime. The government consists of the Prime Minister and the relevant Ministers (see D4.1).

In Romania, the Ministry of Interior and Ministry of Health handled the pandemic response, with the Ministry of Health overseeing the 41 District Public Health Authorities (DPHAs). We can observe a ***centralised, top-down communication approach***: the National Council for Emergency Situation coordinates all pandemic communication. During the emergency state, the Ministry of Interior and the State Secretary for Emergency Situation held daily press conferences to announce the evolution of cases and the measures taken, broadcasted by all TV channels. The main communicators were the President, Prime Minister, Minister of Health, and Head of Department for emergency situations. As such, the communication can be described as somewhat ***personalised***.

The communication campaign implemented by the government was ***amplified by NGOs*** such as the Romanian Red Cross, Dăruiește Viață Association, Vodafone Foundation, UNICEF, and Save the Children.

To combat online misinformation, the National Communication Strategy Group advised the National Authority for Management and Regulation in Communications (ANCOM) - which sits within the Ministry of Internal Affairs - to remove or block certain content. This strategy to remove disinformation was accompanied by ***concerns about the freedom of speech***; a concern which was reinforced by the limit of rights through the emergency state.

A major barrier to the dissemination of information was Romania's hyper-centralised health care system, which failed to ensure communication between health information system players. However, we can also observe positive examples of ***collaboration across different sectors*** with the example of the national emergency hotline Tel Verde.

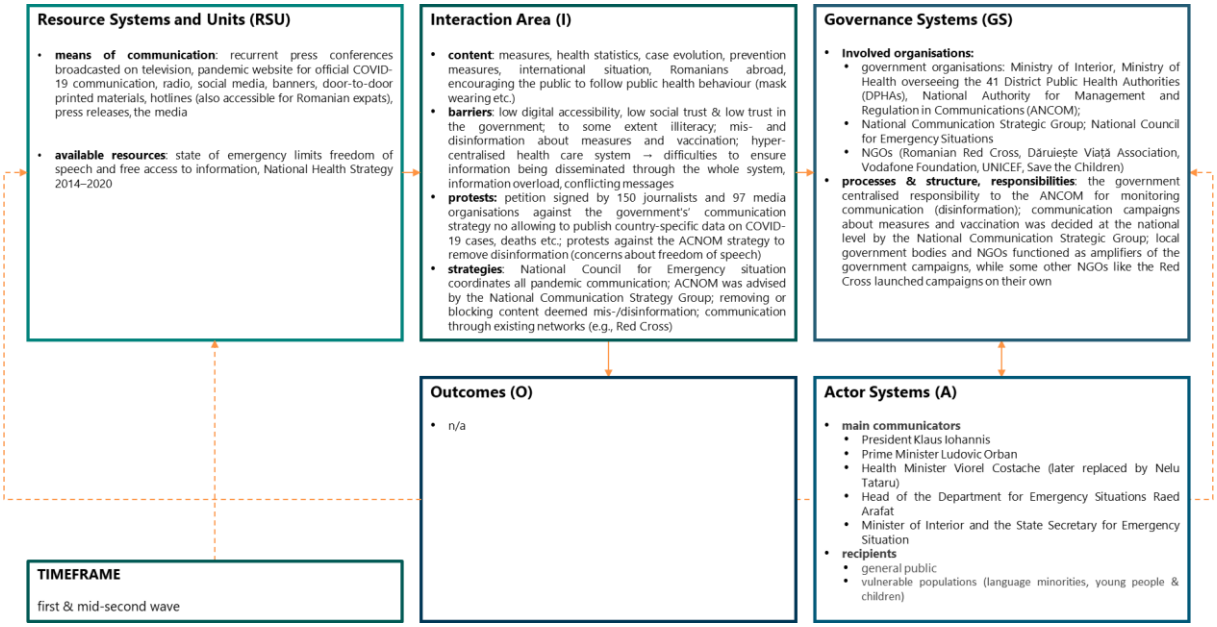

Figure 10. Romania's COVID-19 Communication Approach

3.8 Spain

Spain, a parliamentary monarchy, has a multi-layered administrative system with regional and central administrative management (Alba & Navarro 2003). On a national level, the Spanish parliament is the point of decision making for the central government (Heywood 1995), whereas parliamentary sub-political systems have been developed on a regional scale in 17 autonomous communities and two autonomous cities (Melilla and Ceuta) (see D4.1).

Spain declared a ***state of alarm*** at the beginning of the first COVID-19 pandemic. This allowed for extraordinary measures to be taken. Within this regulatory framework, the Spanish government used ***press conferences*** broadcast live from the Moncloa Palace (headquarters of the Presidency of the Government and the crisis committee). The conferences were organised by the Secretariat of State for Communication which is in charge of the coordination of the government's information policy and management in a national crisis situation. The Secretariat of State for Communication reports to the President of the Government and the ministers' spokesperson. The press conferences contained medical/public health information, political information and national security information. The main communicators were Fernando Simón (Director of CCAES, the national Crisis Centre), Salvador Illa (Minister of Health) and Pedro Sánchez (President of the Government) during the first months of the pandemic.

After the first wave, the regional governments became the ***main actors in managing and communicating the pandemic***. The official communication strategy in Spain predominantly addressed the general public. In the first months of the pandemic, Spain had a reactive and emergency focused communication approach. This changed over time, especially a few months after the pandemic, when the approach turned into a proactive and educational communication approach.

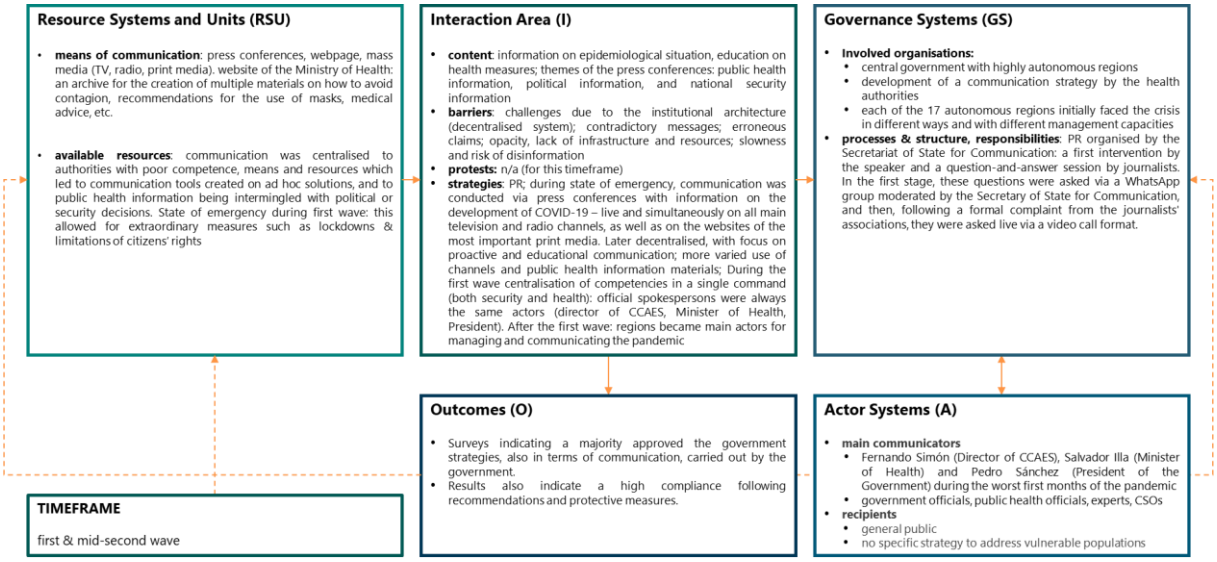

Figure 11. Spain's COVID-19 Communication Approach

3.9 Sweden

Sweden abides by the model of constitutional monarchy and is based on four primary laws: the Act of Succession, the Freedom of the Press Act, the instrument of Government and the Parliament (Riksdag). Moreover, Sweden's constitution is based on representative democracy, parliamentarism and popular sovereignty. The monarch is considered the head of state but does not have political power (see D4.1). In a similar fashion, the political points of authority are the Prime Minister, party leaders and other cabinet members. In Sweden, the key communication actors were the government, public health stakeholders, and communities.

Once the pandemic hit Sweden, the government made it clear that the country's response to COVID-19 would be based on strategies implemented by the Public Health Agency (PHA). ***Two key communication plans*** were identified by the PHA, with the first plan comprising 5 key goals to encourage communication focusing on minimising the spread of infection. As mentioned in the *D7.1 Baseline Report: Communication and Information*, the PHA proclaimed that they would work on a second communication plan intended for vulnerable communities. The plan would include translations of information as well as information in "Easy Swedish."

Similar to Germany, the PHA engaged in ***multilingual support***. For example, COVID-19 information was made available in 29 other languages, including Arabic (Sweden's second language), English, and Somali. Note that Sweden has a far higher percentage of Somali immigrants than other countries.[5]

We observed an ***increase in trust*** in the government and citizens being ***well informed*** about the COVID-19 pandemic. Well informed resources include government websites. Krisinformation.se (developed by the Swedish Civil Contingencies Agency), for example, contains government information and communication in the event of a crisis and major incidents. Additionally, the website "The Government's work in response to the virus responsible for COVID-19" issued by the Ministry of Foreign Affairs contains reliable links directing users to websites of additional government offices and

[5] Opensocietyfoundations.org. n.d. *Somalis in Malmo*. [online] Available at: <https://www.opensocietyfoundations.org/publications/somalis-malmo> [Accessed 27 April 2022].

agencies. To amplify efficiency in the information received by the public, the news media frequently intervened by helping the government in reaching out to the public with key COVID-19 information.

Overall, we observed Sweden having a ***relaxed communication approach to the pandemic***. For instance, Sweden used 'nudges' rather than prohibition. In other words, Sweden encouraged behavioural recommendations instead of legal orders. Interestingly, this was considered a more productive and strategic way to address the pandemic (Pierre, 2020). In due course, Sweden's relaxed approach was criticised. For instance, supporters of Anders Tegnell, State Epidemiologist and key communicator providing information on Sweden's COVID-19 situation went on to regret the relaxed approach adopted.[6] Moreover, former State Epidemiologist Annika Linde said that had tougher restrictions been put in place, more lives could have been saved in Sweden.[7]

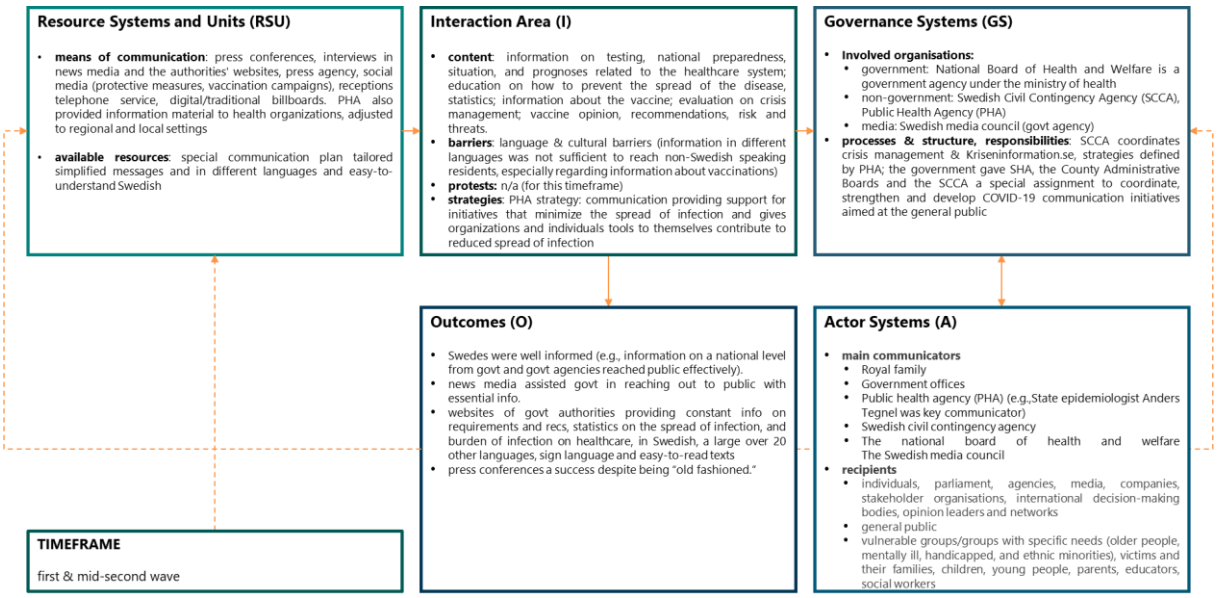

Figure 12. Sweden's COVID-19 Communication Approach

3.10 United Kingdom (England & Wales)

While the United Kingdom comprises four countries, England, Northern Ireland, Scotland and Wales, this analysis focuses specifically on Wales and England due to the research teams being based in these countries and having an in-depth knowledge of the communication practices implemented (see D4.1).

The United Kingdom (UK) is a constitutional monarchy and parliamentary democracy. In the UK parliament, particularly in the House of Commons, there are members representing both England and Wales. The second chamber of the UK Parliament, the House of Lords, complements the work of the House of Commons by making laws, considering in-depth public policy and holding the government accountable.

The UK ***initially adopted a centralised communication approach***; initially, the four nations worked together to respond to the pandemic and a government-funded UK-wide information campaign was launched at the beginning of the pandemic. The main communicators were the Queen, the Prime

[6] BBC News. 2020. *Did Sweden's coronavirus strategy succeed or fail?*. [online] Available at: https://www.bbc.co.uk/news/world-europe-53498133 [Accessed 27 April 2022].
[7] Ibid.

Minister, and the British Health Secretary; the Chief Medical Officers for England, Scotland, Wales and Northern Ireland acted as the government's spokespersons.

Over time, however, we can observe ***country-specific communication measures***. For example, the ***use of messages*** such as "stay alert, control the virus, save lives" was not adopted by all countries, thus, the clarity of this message was questioned. As such, we can observe a balancing act between the necessary flexibility for each country to adopt their communication strategies to the epidemiological situation, and the need for unity and clear messages.

While much information was translated into a variety of languages, we can also see that charities and trusted members of communities became important actors to provide ***tailored information*** to (vulnerable) populations.

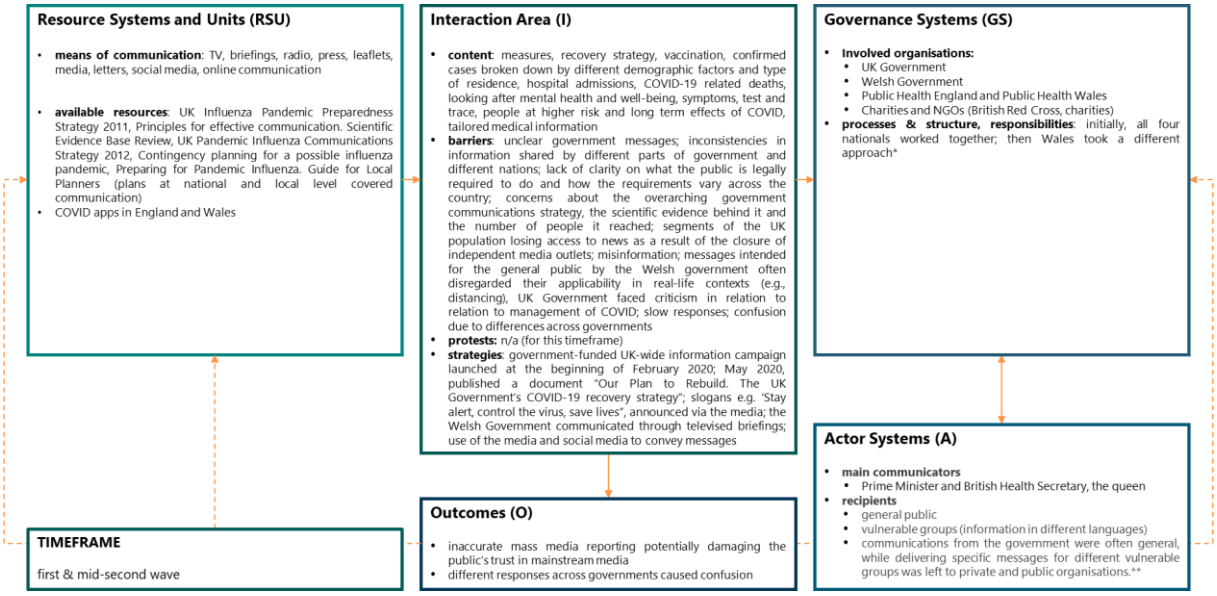

Figure 13. UK's COVID-19 Communication Approach

4 Indicators of communication vulnerability

In order to evaluate the level of success of risk communication in terms of both planning and implementation, indicators of efficacy are required. Following the review and analysis of *D7.1 Baseline report: Communication and information* and as presented in *D2.1 Database containing different data sources*, several relevant indicators were identified as key to effective communication and information practices. **Trust** is central to all risk communications (Enria, L. 2021), in both the governance system and its actors' communicating information, but also in the resource units, or agencies supplying data used to inform policies and response measures. Closely linked to trust, is the principle of **transparency**, which should be embedded into the governance system and the system units which supply it, as the disclosure of unfavourable information has damaging effects on the trust and reputation of the reporting institute (Moon, MJ. 2020). It was also observed in D7.1 that the information should be **reliable** and grounded in **scientific** evidence. For instance, messaging regarding personal mitigation measures such as wearing facemasks and social distancing should be accompanied by information regarding their scientific basis. This strengthens the link between the governance systems and the interaction areas (Melecki, KMC., et al 2021). Further to this, the interaction area should be engaged

through **two-way communication** (Anson, 2021, a), to shape the needs of the target audiences but also to encourage public discourse**.** This will foster **inclusivity** which is particularly crucial for effective communication of information to vulnerable groups, those who may be at increased risk of harm, such as the socioeconomically disadvantaged, and ethnic and linguistic minorities, among others (Anson, 2021, b). Finally, the **frequency** of the communications should be factored into the timeline of the communication plan, based on the status of the event, and the requirement for information and public engagement and compliance.

Beyond these key indicators for effective communication and information practices, there are also a number of indicators specific to communication and information vulnerability. During the COVID-19 pandemic, the volume of information communicated and the speed at which these communications evolved was unlike previous crisis situations. The requirement for tailored and accessible communication, beyond a general 'one size fits all' approach, was a key determinant of public compliance and engagement. However, for the most part, the initial approach did not consider three key vulnerabilities of the information user and the actor system: **language**, **literacy** and **digital access**. The disproportionate impact of COVID-19 on marginalised, vulnerable groups has been well reported since the early stages of the pandemic (Gaynor TS & Wilson ME, 2020). Beyond exacerbated health and economic vulnerabilities, vulnerable persons were also at a disadvantage in terms of their ability to access information (Armitage, R., et al 2020; van Deursen, AJ. 2020; Moldonado, BNM. 2020). Government systems and their resource units need to develop and deliver messages that are accessible to all members of society, not just the majority. Individuals living with disability, the economically disadvantaged and migrant communities, to name a few, were not embedded into the communication plans of most governments across the EU and the UK and lacked access to reliable and actionable information, as described in D7.1. Without access to trusted information, individuals will likely seek alternative information sources, potentially exposing themselves and others to **misinformation** (Kim HL, 2020). Misinformation from untrusted and unreliable sources can have serious impacts on the information user (Tasnim S, 2020).

While this information will predominantly be collected through empirical research with vulnerable groups, we can see that trust, in particular, is reflected in outcomes of the desk-based research: in Romania, low trust in the government acted as a barrier to communication, while in Sweden, high trust in the government and news media supported the voluntariness-based communication strategy. In Austria, Portugal, and the UK, we can observe declining trust over time (after an initial increase in trust in the government in Austria). The role of two-way communication, language, literacy, and digital access is reflected in the discussion chapter below.

5 Discussion

In the following, we discuss the above findings across the countries, according to our COVID-19 risk communication model and against the backdrop of scientific literature. We first look at the **governance and actor systems**, focusing on communication structures, responsibilities, as well as the main communicators, the involvement of NGOs, and the audiences addressed in risk communication. Then, we look at the **interaction areas**, more specifically, the barriers and messages we can identify in COVID-19 risk communication. Finally, we discuss findings regarding the **resource systems**, most importantly the channels used for risk communication.

5.1 Governance systems & actor systems

In the initial phases of the pandemic, all countries under research opted for a **centralised COVID-19 risk communication strategy**. For example, Belgium called this a 'federal phase' in which the coordination and communication regarding the pandemic took place on a federal level. Similarly, the UK started with a UK-wide communication campaign which was later changed to country-specific approaches. Austria, a country characterised by its strong federalism, also followed a centralised COVID-19 communication in the timespan under research. Further, four of the ten countries announced a **state of emergency** during the first COVID-19 wave (Spain, Greece, Portugal and Romania) which was also a push toward a more centralised communication. Nonetheless, there were still significant differences in the set-up and the distribution of responsibility for the COVID-19 risk communication as well as its actual communication. Additionally, despite the centralised communication approach, the findings below highlight how inconsistencies and conflicting messages were common in almost all of the countries analysed.

Most countries adopted a **centralised and top-down approach**. However, Portugal quickly moved to a communication approach that was built on the idea of strengthening the government's engagement with the public. Similarly, Spain, during the early stages of the pandemic, switched its communication approach from one that was reactive and focused on the emergency of the event to an active and educational approach. In relation to top-down communication, the literature highlights how bottom-up risk communication approaches characterised by community engagement are key to "creating local and context-specific solutions to prevention and control responses" (Gilmore et al. 2020, 2). However, research has shown that some vulnerable groups (e.g., ethnic and minority populations) may be more passively involved (Gilmore et al. 2020).

All countries used **press conferences**. However, different actors were involved in these regular public appearances. Some countries opted for **dedicated spokespersons** to communicate about COVID-19 whereas others relied on **representatives of their government** for their risk communication. In Austria, for example, there was the so-called 'virological quartet', composed of the Chancellor, Vice-Chancellor, Health Minister and Interior Minister. Similarly, in Spain, the Director of CCAES, the National Crisis Centre, the Minister of Health and Pedro Sánchez, President of the Government, held regular press conferences. Greece nominated a dedicated spokesperson who was officially part of the Ministry of Health. In Romania, the Ministry of Interior and the State Secretary for emergency situations held daily press conferences. The main communicators were the President, Prime Minister, Minister of Health, and Head of the Department for emergency situations.

In the majority of countries, the ministries involved in the COVID-19 communication were the **Ministry of Health** and the **Ministry of Interior Affairs/Interior Security**. Interestingly, in Portugal, the Ministry of Foreign Affairs was also involved in the governance of the COVID-19 risk communication. In some countries, there were also other key actors involved in governance and communication, such as **National Crisis Centres**, equivalent institutions and public health institutes and their representatives. In some countries such as Belgium, Romania and Spain, much of the COVID-19 communication was coordinated by the national crisis centres in cooperation with other ministries. Again, Belgium elected a Coronavirus Commissioner who was in charge of coordinating the COVID-19 communication efforts. This approach was adopted by a few other countries in the later phases of the pandemic. As already outlined above, the Romanian State Secretary for Emergency Situation was part of the daily press conferences. In the UK, the Queen broadcasted COVID-19 messages to the nation whereas the royal family in Sweden played a rather minor role in the COVID-19 risk communication.

In Belgium and Germany, **Public Health Institutes** played an important role in the risk communication. In Belgium, the institutes were also involved in communication through press conferences. The Belgium government installed a communication structure during its press conferences that divided, on the one hand, new COVID-19 rules and measures passed at the federal level communicated through press conferences organised by the federal government and, on the other hand, figures on the numbers of COVID-19 cases, hospitalizations, deaths and other relevant data. Such information was communicated in separate press conferences by a joint team from the Federal Public Service Health, Food Chain Safety and Environment (also known as FPS Health), the NCCN, and Sciensano (the national public health institute of Belgium). Italy followed a similar approach: the content of the government's measures was directly provided by the Italian Prime Minister. The evolution of the epidemic through the main data was communicated via a daily press conference by the Civil Protection together with the most important National Health authorities: the Ministry of Health (MOH), the Italian National Institute of Health (ISS) and the Technical Scientific Committee (CTS). In Sweden, the response to COVID-19 was based on the strategies implemented by the Public Health Agency (PHA). The Prime Minister and/or the Minister of Social Affairs participated in the press conferences arranged by the Swedish Civil Contingency Agency (which is responsible for issues concerning civil protection, public safety, emergency management and civil defence as long as no other authority has responsibility). The Minister of Finance has given a number of separate press conferences. Daily press conferences were organised by PHA. State epidemiologist Anders Tegnell became a central communicator to update the Swedish situation globally, and nationally, and inform about protective measures and recommendations. On the contrary, the Austrian Public Health Institute was important for the provision of data through web pages and newspapers but stayed in the background in relation to other communication channels and public appearances during regular press conferences.

We can also observe interesting differences in the **involvement of non-governmental organisations (NGOs) and civil society organisations (CSOs)** in the pandemic risk communication. In some countries, there are close relationships between the government and various NGOs and CSOs, which play an important role in **shaping and/or amplifying** risk communication. For example, in Greece, the WHO supports the government in providing information material, as well as on-site assistance in refugee and migrant camps. Furthermore, IOM, UNHCR and Médecins Sans Frontières (MFS) provided tailored information and guidance to refugees and migrants (e.g., in the form of posts and podcasts), whilst simultaneously raising concerns about migrants' situation (e.g., hygiene issues in camps). In Austria, the Austrian Red Cross played an important role in defining the two main communication strategies, as well as developing the contact tracing app. In Belgium, Amnesty International (AI) and MSF played an important role, drawing attention to issues such as ethnic profiling in the enforcement of measures (AI) and sharing experiences of the most vulnerable (MSF), respectively. In addition, organisations working with vulnerable groups (e.g., Flemish's centre for clear language' Wablieft, SOS Jongeren/Jeunes) provided tailored information to their clients. In Romania, the communication campaign implemented by the government was amplified by NGOs such as Romanian Red Cross, UNICEF, Save the Children, which also had separate information campaigns according to their target group and tackling subjects (e.g., mental health, online schooling, blood donation, etc.). In Germany, NGOs such as the German Association of Community Colleges and the German Red Cross Institute for Education and Communication offered online courses on different topics, while NGOs like the Federal Centre for Political Education provided information on the political and socioeconomic consequences of the pandemic, and the migrant advocacy organisation ProAsyl provided an information portal for migrants. As such, we can observe that NGOs and CSOs play a double role in communication: on the

one hand, they act in an **advocacy role**, drawing the governments and/or the public's attention to issues such as human rights implications, solidarity with vulnerable populations, sharing their experiences, and raising awareness of specific issues (e.g., overcrowding in refugee camps). On the other hand, they act as **communicators of tailored information** to specific vulnerable groups (i.e., their clients), such as migrants, refugees, young people, or children. While the literature also highlights the key role that NGOs and CSOs are playing in providing information to vulnerable groups during the pandemic, it also highlights the need to urgently assess their capacity to provide this support (Clark-Ginsberg & Petrun Sayers 2020). Resource related barriers such as a reduction in volunteers and financial challenges may limit the capacity that these organisations have to provide this vital support.

In other countries, NGOs play a **subordinate role** in risk communication. This is the case in Italy, Portugal, Spain, and, to some degree, in Sweden and the UK. Regarding the latter, NGOs **supported risk communication** in sharing government information, thus contributing to **reaching vulnerable groups**. In Sweden, the PHA declared that they would produce a separate communication plan to reach vulnerable target groups; and made use of the online channels of various NGOs (FUB, The Swedish National Association for People with Intellectual Disability). In the UK, the British Red Cross provided information in more than 200 languages, including advice on various aspects. In addition, charities such as the British Heart Foundation also provide coronavirus-related information on their website. The Children's Charaty Barnando's also established Boloh – The Black, Asian and Minority Ethnic family COVID-19 Helpline for those aged over 11 years. However, we observe a less prominent role of NGOs in risk communication compared to other countries.

Definitions of risk communication highlight how it is focused on the exchange of information between different stakeholders (Ndlela, 2019). As outlined above, there have been a variety of different stakeholders involved in the risk communication process during the pandemic. It is important to consider the perceived credibility and trustworthiness of different information sources as this can influence the effectiveness of risk communication. As the STAMINA project (Sanchez et al., 2021) also highlights, "no matter how well thought through and well packaged an information might be, it will not communicate risk effectively if trust and credibility are not established first" (Bourrier 2018, 8). Research has highlighted how "sources perceived as credible are more persuasive" (Bavel et al. 2020, 465). Recommendations for effective communication from the literature include identifying sources (e.g., religious or community leaders) that are credible to different target audiences to share messages (Bavel et al. 2020).

In the **Actor System**, we also look at who is targeted by crisis communication, in particular, those who fall under vulnerable groups. Indeed, while some groups were defined as particularly vulnerable to the pandemic (e.g., older people and people with pre-existing health vulnerabilities), certain **communication vulnerabilities** (such as language or cultural barriers) create a need for tailored communication. Overall, government communication mainly seemed to target the general public; tailored communication towards different vulnerable groups seemed to be outsourced to organisations such as NGOs and CSOs, which further acted as amplifiers for messages. Clark-Ginsberg and Petrun Sayers (2020) outline how vulnerable populations will "likely bear the brunt of COVID-19 information insufficiency and misinformation. The consequences of such communication missteps are serious and compounding negative outcomes for many vulnerable groups" (1). As highlighted above, our analysis is also consistent with this acknowledgement of the role that CSOs are playing in acting as an important information source for vulnerable populations. However, as outlined further below, there is a need to understand the capacity that CSOs have to play this role.

We found that in most countries, official communication did also address certain vulnerable groups, at least to some degree. Those affected by **language and/or cultural barriers** (non-native speakers, certain migrant communities, and/or language minorities) were considered in communication strategies in Austria, Belgium, Germany, Portugal, Romania, Sweden, and the UK. We further identified tailored communication to **older people** (Austria, Belgium, Greece, Italy, Sweden), **children and young people** (Austria, Belgium, Germany, Italy, Portugal, Romania, and the UK), as well as **people living with disabilities**, particularly, hearing impaired persons and people with mental disabilities (Austria, Germany, Greece, Sweden). Also considered were **people living with health vulnerabilities** (Austria, Greece) and **healthcare workers** (HCWs), caregivers, and social workers (Belgium, Italy, Portugal, UK). Other groups include people with lower education and women (particularly those at risk of domestic violence). Best practices for risk communication practitioners highlighted by Glik (2007) include that "[r]isk messages and approaches should be tailored for the diverse audiences they are intended to reach, taking into account differences in and the influences of social, cultural, and demographic backgrounds" (Infanti et al., 2013, p.11). Studies suggest that more effective approaches to tailoring risk communication involve conducting research with different groups to understand their knowledge, understanding and perception of risk, and information needs (Infanti et al., 2013). While our analysis highlights that there were tailored approaches across countries, the desk-based research undertaken did not identify the extent to which different actors undertook primary research to understand the information needs of different audiences that informed how the communication was tailored. This will be followed up in the next stage of the COVINFORM project when the empirical research is undertaken.

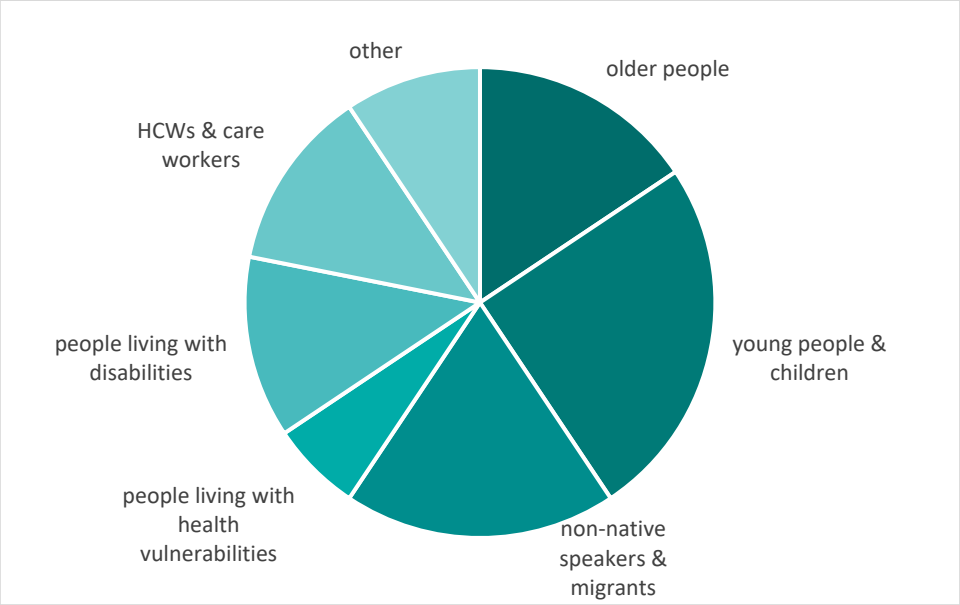

Figure 14. Vulnerable Groups Addressed in Risk Communication

5.2 Interaction area

As outlined above, risk communication plays a key role in influencing decision making, behaviour change and the maintenance of trust (WHO, n.d.). In the initial stages of the pandemic, when there was an absence of vaccinations, the policy response focused on the communication of public health guidance and measures (Fakhruddin et al., 2020). While the critical role that communication has played and continues to play in the response to the pandemic has been clear, there have been communication

gaps. The following Figure illustrates the **barriers to effective communication** observed across the countries under research.

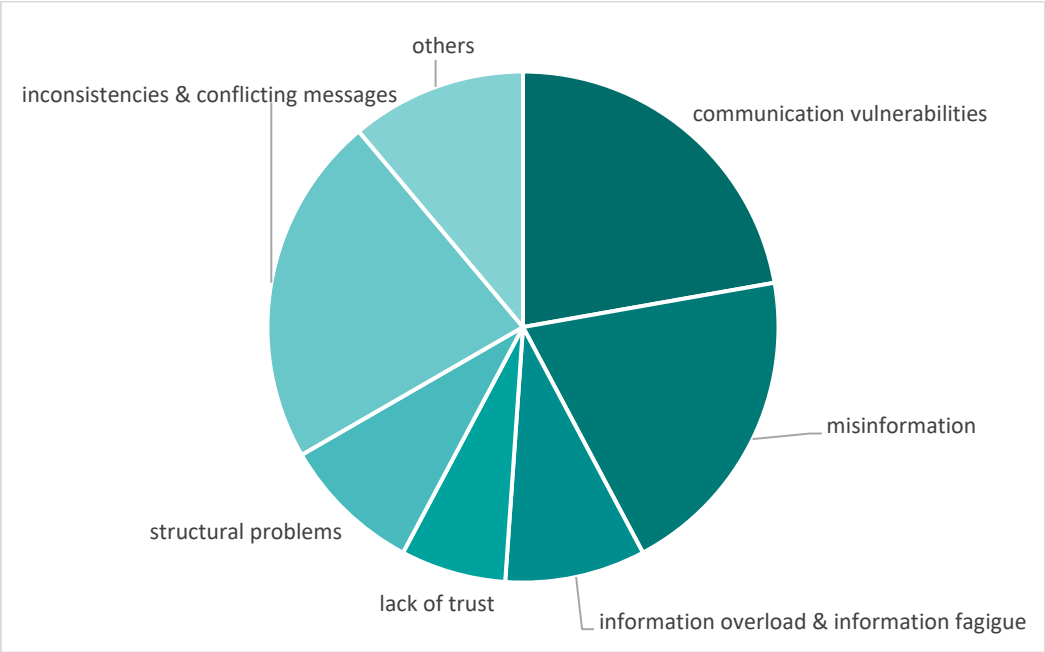

Figure 15. Communication Barriers

The observed barriers are similar across countries, although we can observe some differences. **Communication vulnerabilities** such as language and cultural barriers (e.g., Austria, Belgium, Germany), low digital accessibility (e.g., Romania), illiteracy (e.g., Romania), and a lack of strategy to address vulnerable populations (e.g., Portugal), as well as the danger of **dis- and misinformation**, were a barrier in all countries under research. To address barriers related to communication with vulnerable populations, Clark-Ginsberg and Petrun Sayers (2020) highlight how there is a need to avoid one size fits all approaches and provide tailored communication strategies. Additionally, they outline the need to understand the support systems available to address the needs of vulnerable groups such as civil society organisations (e.g., community centres, faith-based institutions) that provide alternative information sources for vulnerable groups. Their final recommendation is for further research to understand communication with vulnerable groups, which is the focus of the next stage of the COVINFORM project.

The analysis also highlighted how **information overload and information fatigue** was also a problem that could be observed in several countries (e.g., Austria, Germany). We could also identify **structural issues** – such as systemic issues like a decentralised system and the need to centralise communication (e.g., Spain), or differences across governments within a country (e.g., UK). **Lack of trust** in official (government) communication was in some countries already a pre-existing condition; in others, this may have been caused by a perceived lack of transparency in the risk communication. Trust plays a key role in risk communication. As outlined above, the WHO (n.d.) outlines how risk communication is used for the maintenance of trust. Additionally, building and maintaining trust is not only an objective of risk communication, but is necessary for risk communication to be effective (Renn & Levine 1991). Thus, as discussed further above, it is important to understand the levels of trust that different groups have in different sources of information.

Finally, we could observe inconsistencies and conflicting messages in almost all countries under research: unclear messages (e.g., UK), contradictions, disagreements between politicians or between

politicians and experts (e.g., Belgium), and/or erroneous claims (e.g., Spain) all caused confusion and uncertainty. Conflicting information can also mean that it is hard to know what information to trust (Wilson et al., 2020). Deliverable 5.2 of the STAMINA project[8] supports this highlighting how messages and instructions need to be consistent to prevent confusion and also to maintain trust in the message and information source (Sanchez et al. 2021).

While the above section has focused on the barriers to effective communication, it is also important to consider barriers that may prevent the target audience from adopting the recommended measures and behaviours being promoted in the communication. For example, there may be different financial, psychological, health-related, and social barriers that prevent the target audience from being able to adhere to recommended measures and behaviours. Behaviour change is also influenced by a variety of different factors including capability (e.g., knowledge and skills), opportunity (e.g., resources and social norms), and motivation (e.g., emotional responses) that are required for behaviour change (Michie et al. 2021). Thus, it is important to not only consider the barriers to effective communication but also the barriers to the desired behaviour change.

We also observe several interesting aspects of the **strategies used in risk communication**. Some countries, e.g., the UK, Germany, Greece, Austria, and Belgium, make use of **slogans and messages**; for example, the UK's "Stay alert, control the virus, save lives", Germany's "AHA formula", and Austria's "baby elephant" as the analogy used to measure the 1 Meter minimum safety distance. Information campaigns are developed with the evolution of these messages over time. Furthermore, we can see the **pleas to emotions** such as fear (e.g., in government press conferences to motivate compliance with regulations, as observed in Austria, or worst-case scenarios such as shock messages, as observed in Germany), but also values such as **messages of solidarity and unity** (e.g., target-group-specific messages emphasising pro-social values (mutual assistance, the public good, as observed in Germany, or attempts to encourage a sense of solidarity in Belgium). Drawing on insights from the social sciences, Bavel et al. (2020) outline how "[m]essages that (i) emphasize benefits to the recipient, (ii) focus on protecting others, (iii) align with the recipient's moral values, (iv) appeal to social consensus or scientific norms and/or (v) highlight the prospect of social group approval tend to be persuasive" (462). The article also examines threats and how targeting fears is only useful for behaviour change in certain contexts when people feel capable of dealing with the threat (Bavel et al. 2020). Where people do not feel capable, this can result in defensive responses. It can be argued that due to a variety of different factors (e.g., physical, financial, psychological, social), different groups of the population may have different levels of capability in managing the threat of COVID-19 and some vulnerable groups may feel less capable in being able to respond. Thus, the target audience should be considered in the design of message content and when considering the targeting of fears.

Also of interest is the **role of voluntariness** during communication campaigns. Here, we first look at Sweden, which famously took a different approach than other European countries, handling the crisis through recommendations rather than restrictions. This was made possible through Swedes' high trust in government authorities (Medieakademin 2020), as well as their high trust in and participation in news media to a large extent (ibid.; Nordicom 2021). However, we also see attempts at voluntariness in communicating recommendations rather than restrictions in other countries, yet with less success.

[8] https://stamina-project.eu/wp-content/uploads/2022/01/D5.2-Guidelines-on-risk-communication-principles-implementation-V1.0.pdf

5.3 Resource systems

In all countries under research, risk communication followed a **multi-channel strategy**, which increases the reach of the messages. Looking at the **means of communication**, we can see that COVID-19 risk communication was predominantly conducted in a **one-way and top-down approach**, through press conferences, (government-run) websites and dashboards, as well as mass media (TV, radio, as well as printed and online newspapers). These channels were used in all countries under research. Other means of communication include information campaigns, printed materials, press releases, billboards, etc., which were used individually. While many of the one-way communication channels can be used to disseminate information to a large audience, they do not enable stakeholders responsible for risk communication to understand the audience's information needs and that the audience has received, understood, and been able to act on the communication. WHO (2020) guidance on risk communication and community engagement at the beginning of the pandemic included the following goal: "Establish, build, and maintain trust with the population through ongoing two-way communication and engagement that regularly addresses misunderstandings, misinformation, rumours, and frequently asked questions" (3).

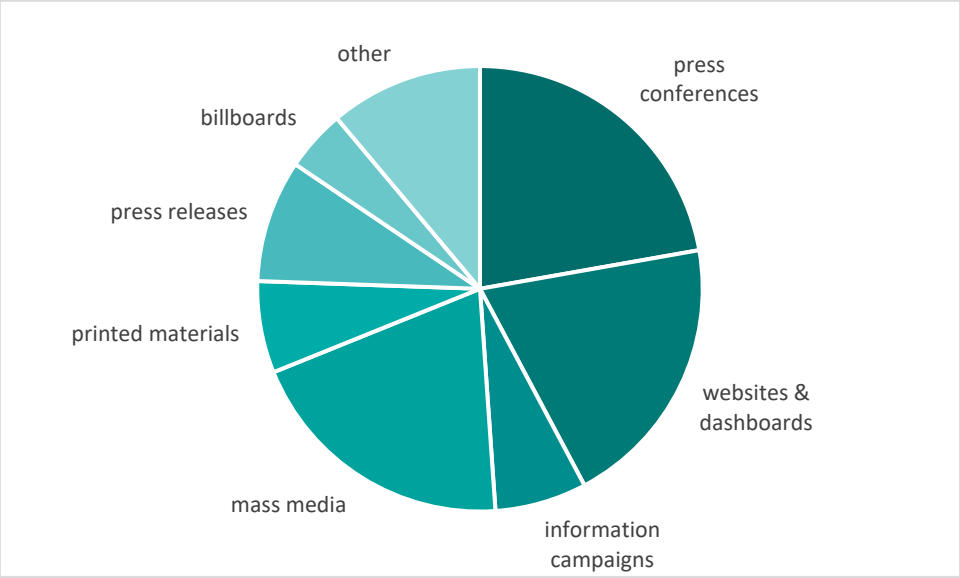

Figure 16. One-Way Communication Channels

Despite the focus on one-way channels, all countries under research make use of social media, which we can – at least to some degree – classify as a **two-way communication channel**. Furthermore, an interesting example is **hotlines**, which were established in Austria, Greece, Romania, and Sweden. In these countries, pre-existing or newly established health emergency hotlines allowed residents to inquire about the pandemic. In Greece, events and webinars were organised by professional organisations. This is in line with the observed outsourcing of direct communication with vulnerable groups to NGOs, CSOs, and other organisations. Two-way communication channels such as social media and hotlines provide an opportunity to engage with the target audience and gain insights into their perceptions, information needs, and the impact of the communication. However, it is important to also acknowledge the challenges associated with two-way communication channels. For example, the use of social media may exclude people from receiving key information if they do have access to the necessary technology such as smartphones or the internet. Different target audiences may require

the use of different communication channels; however, it is important to ensure that there is consistency in the messages being sent across the different channels (Sanchez et al. 2021).

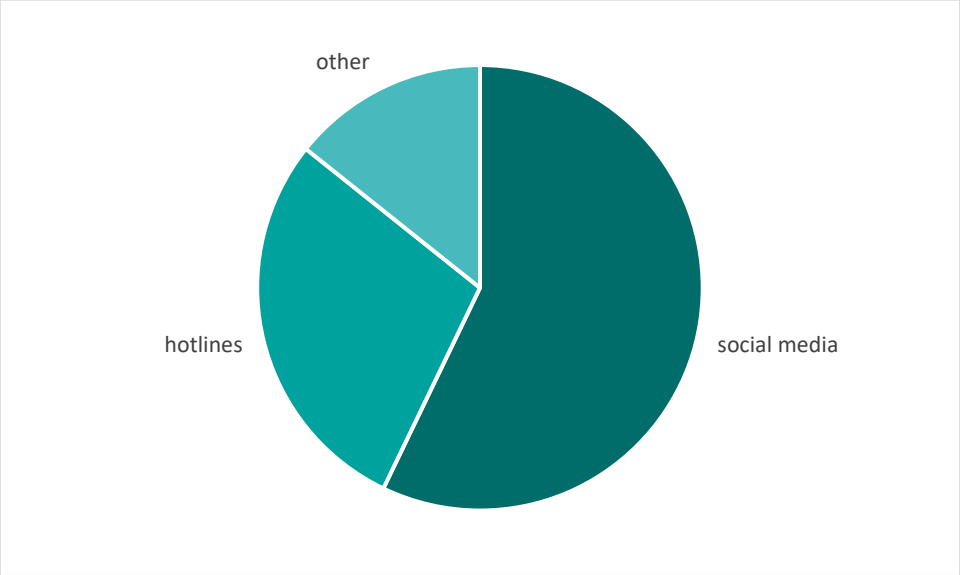

Figure 17. Two-Way Communication Channels

Most of the countries did not have communication plans or only older influenza pandemic preparedness plans. Some, however, had formal strategies (e.g., Italy). Infanti et al. (2013) outline how "many countries in the European region still need to concentrate on advanced risk communication planning efforts at all levels of public health, such as needs assessments and public engagement plans" (1). Our analysis based on desk-based research suggests that this gap still exists, however, the empirical research undertaken in the next stage of the COVINFORM project will further examine how existing plans and strategies informed risk communication practices.

Risk communication is a "multi-dimensional process" and the impact of risk communication is based on a complex interaction between different factors such as audience characteristics, message source, and message content (Breakwell 2000, 119). Adding further complexity is that it is difficult to anticipate and control the impact that risk communication will have as it does not occur in isolation but is related to different "psychological, social, institutional, and cultural processes" (Breakwell 2000, 117). As highlighted in COVINFORM deliverable *D7.3 Analysis: Communication and information*, there is limited research examining the impact that the different communication strategies had on influencing behaviour change, with research predominantly focusing on the compliance with measures and the adoption of public health-protective behaviours. While risk communication will likely have contributed to the compliance with recommended measures and behaviours, it may be difficult to determine the extent to which compliance was influenced by risk communication or other factors such as legislation/regulations, social norms, cultural, and socio-demographic. The empirical research undertaken in the next stage of the project will examine the perception of and different positive and negative impacts of the risk communication approaches beyond behavioural compliance.

6 Lessons Learned

We align our findings with recommendations for risk communication, particularly the whitepaper issued by the COVINFORM and PROACTIVE projects[9].

First, our analysis shows that all countries followed a multi-channel strategy, with a focus on one-way and top-down communication: governments mainly used one-way communication channels such as press conferences, websites, and mass media. The exception was social media channels as a form of two-way communication, as well as hotlines that were established in some countries. Most countries also worked with awareness-raising campaigns either targeted at the general public or specific groups (e.g., Youth). In some countries, NGOs played an important role. They amplified government-issued information and provided tailored communication to their clients, thus bridging the governments' communication (directed predominantly at the general public) to their target audiences. NGOs also took on advocacy roles, thus communicating their clients' needs to the government. As such, we do see efforts taken to ensure **accessible and inclusive communication**. At the same time, we also identify some gaps, particularly regarding dialogue and community engagement.

Second, in the analysis of risk communication strategies, we have observed the use of negative emotions, particularly fear, in communicating worst-case scenarios. That said, we also observed a play at positive emotions and messages of solidarity and unity, potentially helping to reduce anxiety and increase behavioural efficacy. Without a doubt, this has resulted in more **actionable communication**. Other key aspects include clear messages and slogans that communicate clear goals (e.g., "stay alert, control the virus, save lives"). However, there were differences in whether such messages are communicated as recommendations (to be followed voluntarily) or as regulations.

Third, we could identify barriers to risk communication, such as inconsistencies and conflicting messages, which made it difficult for audiences to know which information to trust. Furthermore, in some countries, there was already a lack of trust in official (government) communication, while in others, a perceived lack of transparency may have caused a decline in trust. This highlights that **trusted and credible communication** is essential to effective risk communication. Building and maintaining trust is key. We can observe such efforts in the countries under research: for example, the active role of Public Health Institutes in some countries, or their role in providing trusted data in others, can be interpreted as an approach to providing trustworthy information. Further, some countries established dedicated spokespersons as trusted communicators and credible sources.

Fourth, we can observe that official risk communication is mainly directed at the general public and thus appears to follow a 'one size fits all' approach. Yet, there are some efforts to address communication vulnerabilities and barriers to communication, particularly language and cultural barriers, low digital accessibility, and illiteracy, as well as information overload and information fatigue. Efforts to overcome these barriers help to ensure **relevant and timely communication**. In some countries, daily or weekly press conferences contributed to overcoming barriers. Hotlines were a good means of overcoming barriers related to the digital gap. Further, most countries provide all important information in easy language.

[9] https://www.covinform.eu/wp-content/uploads/sites/39/2021/09/COVINFORM-PROACTIVE-Whitepaper-Communication-in-times-of-crisis.pdf

Finally, **understandable communication**, i.e., sending messages that are understood by the target audiences, is an important recommendation in risk communication. While only empirical research with vulnerable groups will allow us to answer whether this was the case, we could observe some measures taken to guarantee this. For example, in some countries, there were specific awareness-raising campaigns in use for Youth and others for the general public. Additionally, we observed a centralisation of communication (in different degrees) in all countries under research. This helps to avoid inconsistencies between messages by establishing a one-voice principle of communication, thus increasing understandability in communicating a clear and unified message.

6.1 Outlook

This deliverable is the last report on the first iteration of the research activities of WP7. As empirical research in WPs 4-7 is ongoing at the time of submission of this document, the synthesis presented here is based on data collected through desk-based research, in the timespan of January/February 2020 to January 2021. As such, the current analysis does not include insights from the empirical research, which is crucial to understanding the outcomes of communication efforts. However, the analysis conducted identifies crucial questions which we will be carrying forward into the empirical phase of WP7. Thus, we will apply what we have learnt through this analysis and incorporate these insights into the empirical research with both communication experts and vulnerable groups.

Some of the themes we will explore more in-depth will be centred on the experience of vulnerable groups during COVID-19. Here, we are interested in understanding individual experiences regarding government communication, how individuals made sense of such communication, and how information received was interpreted. Related to this are questions concerning individuals' trust in governments and whether interviewed individuals considered their government's communication transparent. Additional questions to be asked will include the demands, needs and purposes for information.

The second iteration of this deliverable will also cover additional timespans, thus allowing comparisons of communication approaches.

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