D2.1

Stakeholder Directory and Map

1st Reporting period
WP2 New challenges and new methods for outbreak communication

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EXECUTIVE SUMMARY

Within the general scope of Work Package 2, which is relevant to identifying new methods and emerging communication challenges during the outbreak of a communicable disease, the principal objective for this report had been to identify and categorise key actors or stakeholders in the field of risk and outbreak communications during a pandemic. Following the process of identification and mapping of various groups of stakeholders, a directory of contacts was put together as a resource for future tasks activities in the project, listing individuals from international organisations and agencies, national public health authorities, European and national associations and more. Furthermore, this report provides a description and critical analysis regarding the role of different groups of stakeholders in the wider context of globalisation and risk communication practices.

The report D2.1 'Stakeholder Directory and Map' starts with some introductory remarks **(Chapter 1)** on the phenomenon of globalisation and its role in the spread of communicable diseases, the extensions this has had for international organisations and local communities, providing the rationale for being considered as key stakeholders in outbreak communication. In all, this section aims to highlight the interconnectedness and interdependencies formed between stakeholders on a global and local level.

The report continues with the contextualisation of outbreak communication, drawing from existing theories on risk and crisis communication **(Chapter 2)**. After attempting a preliminary identification of international organisations, relevant as stakeholders, to communicable disease outbreaks, a closer look at major risk communication theories and their components, made possible the identification of other layers of actors, having the capacity to influence or determine the decisions of policy-makers in response to a pandemic.

The stakeholder analysis followed the traditional path of identification and mapping of stakeholders **(Chapter 3)**. First, the notion of what constitutes a stakeholder in outbreak communication is crystallised, taking into account various examples and working definition from the literature. Considering the particularities, involvement and mobilisation of agents in multiple levels during different phases of a pandemic, the aim has been to produce a broad definition that would make possible to incorporate also stakeholders who are perceived to be external or passive to outbreak communication. As a second step, the methodological approach is presented for the identification of stakeholders, and in connection with the stakeholder definition that was developed for the purpose of this report, national and international entities, organisations and agency are presented in a comprehensive way, attempting a first categorisation and preliminary mapping of those groups of stakeholders.

In the part where descriptions of key stakeholders are provided, the target was to give an indication of the specific role of those stakeholders with reference to an outbreak, and how are they "positioned" in relation to other stakeholders in the event of a pandemic. Links between various organisations were sought, as well as a better understanding on the potential influence these stakeholders can have in the formulation and implementation of health-related policies, based on

various components, such as their level and type of involvement during the recent pandemics. This exercise further enriched the list of stakeholders that can become relevant in outbreak communication, with the pharmaceutical industry (e.g. manufacturers, wholesalers, storage) and local actors or sub-populations (e.g. healthcare professionals, religious groups, ethnic minorities), being the most prominent examples.

Following the aforementioned descriptions, these groups of stakeholders were incorporated into a model which represents schematically the multiple layers and links that exist between them. It is evident that as we move from top to bottom, and with the aid of mass media, social media and the World Wide Web, the general public is connected with an increasing number of sources from where information can be drawn on the pandemic, strategies and preventative measures – including specific communications about immunisation. It is also the presence of the media and the internet that empower people to move on the opposite direction, and drastically influence decision-makers on a local, regional or even national level, based on the behavioural responses that become published through the various means of communication. Another interesting observation is that a hierarchical structure is apparent and respected on international level, as regards communication of messages and information circulated on policy-making level. There are also some standard procedures and clear links for incorporating the industry as stakeholders in the process, while the EU umbrella organisations and associations have a clear role with reference to lobbying that takes place on EU level.

More attention is required for local stakeholders and individuals who are part of a local community, who are perceived as having a dual role in outbreak communication. They can be legitimate actors as healthcare professionals or experts and their involvement may be deemed as necessary in one hand, but these same actors also form part of the general public, meaning that they are also susceptible to be influenced by other sources or stakeholders, who are thought to be more powerful or in need for immediate actions.

The stakeholder mapping in outbreak communication was performed along those three axes (power, legitimacy, and urgency), which represent the 'salience' model as conceived by Mitchell, Agle and Wood (1997). The salience model for mapping of stakeholders in outbreak communication, as it is considerably more flexible and adjustable with respect to stakeholders' attributes; a main characteristic of the salience model is that is allows to identify and depict the possibility for certain stakeholders to pass from one area to another, based on the needs and the given circumstances in the response and recovery phase of a crisis in both the planning and response phase of a pandemic. Thus, a stakeholder which was perceived to be of low importance prior to an outbreak ('latent'), could play a significant role in communication, influencing decisions either of European institutions and national authorities or directly the general public, and eventually this stakeholder might be considered to be of medium ('expectant') or even high importance ('definitive').

Further to the typology of stakeholders that followed, the following organisations, institutions and agencies were identified as key stakeholders:

- World Health Organization (WHO)
- European Commission – Directorate-General for Health & Consumers (DG SANCO)
- European Centre for Disease Prevention and Control (ECDC)

- European Medicines Agency (EMA)
- Ministry of Health and related Departments/Divisions
- National Surveillance Institute for Public Health
- National Medicines Regulatory Agency

In addition, the stakeholders with medium and high levels of immediacy and having capacity to directly impact public perceptions, attitudes and/or behaviour in outbreak communication are the following:

- Non-Governmental Organisations
- General practitioners
- Healthcare workers and professionals
- Primary schools
- Ethnic / minority / religious groups
- Local political parties
- Opinion leaders
- Science journalists
- Media

The report provides a comprehensive list of national and international contacts in outbreak communication in the form of a directory **(ANNEX I)**[1]. The directory lists the various stakeholders in a similar pattern as they are presented in the section of 'Stakeholder Analysis'. With this report being used as a starting and reference point, a database of stakeholders will be kept separately and become populated with the contact details of yet more stakeholders identified in the life cycle of the TELL ME project.

[1] The TELL ME stakeholder directory has been created for internal use and is restricted for access only by project partners and EC services. The TELL ME stakeholder directory appears as Annex I in the original and consolidated version of deliverable D2.1; for consistency purposes it was decided for the main body of text in this report to remain unchanged, including references made to the stakeholder directory or 'Annex I'.

1. INTRODUCTION

As the phenomenon of globalisation steadily continues to grow, with nations reaching new levels of interconnectedness and interdependence on the sphere of politics, economy, culture and technology - based on Giddens' (1990) conception, but with several other extensions too[2] - more layers of densely interwoven processes are being created with time, to effectively give support to this newly established reality. The continuous flow of people, ideas and commodities across international borders formed the archetypal characteristics and processes followed by societies in the past for greater entrenchment of globalisation. The formation of specific policies and codes, on national and international level, further facilitated this movement for people around the world.

Today, the key ingredient that contributes significantly to the propagation of globalisation is the *ease of transfer*. The technological advances and the 21st century revolution in telecommunications, including mass media, social media and the World Wide Web, paved the way for rapid transfer of knowledge and ideas. The same can be said for the increasing mobility and distances covered by people around the world in hours, or even minutes. Almost two decades ago, and in the frame of discussing about the concept of globalisation, Robertson (1992) had talked about 'global awareness', the condition where the world is felt by people to be a space that is shared. Nowadays, the concept of 'global awareness' is more relevant than ever, as any person can relate or feel as part of something greater, that goes beyond the visible boundaries of home or the community.

Certain qualities of this globalised osmosis are manifested in a plethora of business operations within the so-called "global market environment". These business operations include the manufacture and trade of goods, capital transfer, and tourism – only to name a few. International organisations such as the World Trade Organisation (WTO), the World Bank and the International Monetary Fund (IMF) adhere to business models and principles where operational goals are straightforward and top-down processes are followed[3]. These institutions represent the "neo-liberal" form of globalisation, with this signifying that globalisation is a process starting from "above" rather than from "below". In general terms, the strategic goal for such institutions is to maintain a safe and controlled environment, where commerce or market-driven economy can flourish by increasing competitiveness on a global scale – a pivotal force in the world of international business. A key variable for attaining to a certain extent this control, or stability, is through achieving homogenisation in various other layers such as policies, education, culture and so on. In that sense, the World Health Organization (WHO) has also been moving towards this direction, after introducing the International Health Regulations, back in 2005.

[2] The German sociologist Ulrich Beck, examined in his work globalisation under a different light, and provided other dimensions of 'internationalism', introduced the term 'place polygamy' and discussed the ways that different dimensions are manifested in social attitudes as well as elevated fears and concerns among the world population with regard to employment, global ecology, terrorism and of course, global-scale health pandemics (Beck, 2000).

[3] Of course, many more intergovernmental organisations exist, extending to other directions such as the International Organisation for Migration (IOM), the Council of Europe (CoE) or the United Nations (UN), umbrella organisation for a number of other intergovernmental organisations.

Many debates have commonly been focusing on the positive and negative impact of globalisation, as well as the notion of 'homogenisation'. The idea of creation of a globalised or international culture traces its roots back in the 1960s, and the conceptualisation of the world by the visionary Marshall McLuhan (1964) as a "global village" – only to become a reality few decades later with the World Wide Web. Cultural homogenisation had been a powerful trend during that time, with the mass media playing a definitive role in the growth of this movement[4]. However, there is a basic element that is required on the way to achieve cultural homogenisation. This would be the joint participation or exposure of individuals to a common experience, something that could be felt simultaneously and spur similar type of emotions around the world. As unpleasant as it might be, an infectious disease outbreak has such a capacity – the creation of a synchronised emotion and manifestations of various types of behavioural response for individuals around the world, depending on past experience or knowledge.

On the other side, among the various consequences of globalisation, this orchestrated shift towards cultural homogenisation led directly or indirectly to a number of modern day epidemics, or better, the globalisation of diseases, with obesity being the most prominent example. The global HIV/AIDS epidemic that has been around since the 1980s, is another case that relates closely with the consequences of globalisation, reminding that a communicable disease anywhere in the world, is not someone else's problem, but can also be ours. According to Pappas et al. (2003), the consequences of globalization for health can be considered along two dimensions: negative/positive and intended/unintended consequences. This is of particular interest, as the international community and global market policies can "push" certain regions of the world to impoverishment (i.e. negative but marginally unintended consequences by responsible organisations and governments), and in turn these areas become sources of infectious diseases due to the poor hygienic conditions and overall quality of life.

Based on the above, we could argue that two sides of globalisation exist with reference to an epidemic: the globalisation of health promotion and prevention of an epidemic, and the globalisation of response to an epidemic. Both sides have their dark corners of course, mainly as a result of conflicting interests between the nation-state, supranational entities, international organisations and the powerful forces of global economy and financial markets, which have a direct influence on the formulation of policies at national level.

It has been suggested by Robertson (1995) that the modern state system is based on concentration of power, bureaucracy and hierarchical structures. In cases of a communicable disease outbreak or a pandemic, this model can be susceptible, especially under the direct influence of international organisations or supranational entities, which can potentially suppress cultural expressions of the local communities or put into question the power of the state. Thus, while the main objective remains to assimilate national policies into international standards (e.g. WHO International Health Regulations), an excessive degree of perceived influence or involvement to internal affairs, might produce negative feelings for the public. It is such cases where nationalism is amplified and spreads,

[4] However, this idea was later challenged by more contemporary theorists, such as Ulf Hannerz, a social anthropologist, who pointed out to the fact that society progresses towards a 'global culture of dissimilarities', not similarities (Hannerz, 1991). This is quite important to keep in mind for discussions that follow in this report, with reference to stakeholders in outbreak communication.

since the 'global' is perceived to be as something external or alien, which in turn allows cultural relativism to emerge. Nonetheless, according to Robertson (1995), the 'global' and the 'local' must not be seen as two opposites; rather, "what is often referred to as the local is essentially included within the global" (Robertson, 1995, p. 35). This is an important consideration also for decision and policy-makers who operate on international level, in relation to the moral implications and legitimacy of actions taken during public health emergencies. In addition, specific sub-populations, societies or entire nations might find difficult to accept the enforcement of international policies on a local or regional level, if they cannot identify with the ethical principles and values promoted by the international policy-makers (Labonté & Gagnon, 2010). On another level, general public opposition to an 'alien' policy might be so strong that could lead to community outrage (Sandman, 2012), contrary to experts' predictions and expectations. This is discussed more in depth within the context of risk communication.

Even though global governance as concept will be examined more in depth in later stages of the TELL ME project, it would be quite relevant for the purposes of this report to point out to the work carried out by Held and McGrew (2000) who identified three layers in global governance: a) the supra-state layer (e.g. European Union, World Health Organization), b) the sub-state layer (e.g. Local and regional authorities, c) the transnational layer (e.g. IFRC, UNICEF)[5]. These three layers form a first indicator for the analysis of stakeholders that will follow, although outbreak communication escapes the stakeholder frame of 'legitimacy' or 'legitimate actors', to incorporate more stakeholders from the private sector or the media, and create a series of stakeholder sub-structures embed in global governance, same as local is embed into global.

As an additional approach, it would be interesting to underline the unprecedented dependence and vulnerability of countries and intergovernmental organisations to situations of global emergencies, experiencing dramatic shifts of dynamics as well as economic and political instability (Fauci, 2001). Compared with other types of natural or man-made disasters, the sudden outbreak of a communicable disease can immediately cause global concern. The interconnectedness and interdependence becomes more apparent in the case of infectious disease outbreaks, where there is mobilisation across different regions and close partnerships are built between different intergovernmental organisations, previously perceived as separate entities. The frequency of globalised disease outbreaks in the last decades as well as the emergence of bioterrorism as a new international threat, makes easy to understand why global health is always on the agendas of world leaders and policy makers, viewed in the context of foreign policy (Fauci, 2001).

One of the key components in crisis management is a fast and effective response; in the case of pandemic outbreaks, fast recovery and normalisation are equally important to achieve (to regain) economic and political stability and for this reason well-coordinated efforts are required by a wide spectrum of stakeholders in a highly complex globalised environment. An environment which surely allows and facilitates synchronised efforts to be made by organisations and institutions towards an effective intervention, while confronted at the same time with a major challenge: development of messages for public communication. Of course, specialised and intergovernmental organisations and

[5] Despite the clear distinctions made between the three categories or layers, as regards the purpose these serve and position in global governance, a few grey zones still exist as regards issues of power, political influence and legitimacy. Such an example would be the Kyoto Protocol, with the United States and Canada expressing no intention to ratify the Protocol.

agencies operate also in this area, such as the World Health Organisation (WHO), the European Centre for Disease Prevention and Control (ECDC) and the Centers for Disease Control and Prevention (CDC) in the United States.

Perhaps the most recent example of the globalised impact that a communicable disease outbreak can have, was the emergence and spread of the novel influenza A (H1N1) virus, declared as a pandemic with a press statement by the WHO on the 11th of June 2009[6], which raised the worldwide pandemic alert to Phase 6. This statement sparked off a chain reaction of events, with management plans and risk assessments published within weeks by European agencies (e.g. ECDC, EMA), EU Member States and governments placing orders for the H1N1 vaccines (European Commission, 2010) and international organisations issuing additional guidelines and recommendations for dealing with this new threat. For instance, WTO and UNWTO hosted workshops and held discussions on the impact of this pandemic with regard to the trade[7] and travel/tourism[8] sector, respectively. The threat of a pandemic was evident even a year later in 2010, with specific measures taken by the government of South Africa as host of the FIFA World Cup, one of the biggest sporting events in the world[9]. The multi-level and cross-sectoral impact of an influenza pandemic is depicted in the 'whole-of-society' approach made by WHO, where nine sectors are identified which relate to readiness, response and recovery in pandemics (WHO, 2009).

The purpose for these opening remarks is threefold. First, to highlight the challenges posed by globalisation with respect to people behaviour and response towards a communicable disease outbreak, in a world of increased mobility without following any particular patterns. Second, to underline the complexity, interdependence and interconnectedness between different sectors operating worldwide and the implications in transforming something local into global, and vice versa. Third, to give a first indication of the role of communication in public health emergencies and interventions. As regards the latter point, there are few key ingredients deemed to be decisive and effective in behavioural interventions and public health emergency strategies. Groups of stakeholders, flow of information and communication requirements are three such ingredients that merit special attention, and in fact is the focal point in WP2 – *New challenges and new methods for outbreak communication*.

In this report, the focus is on identifying and mapping stakeholders relevant to outbreak communication. Considering the challenges posed by the multifaceted effects and the all-inclusive nature of a pandemic, as well as the wide range and level of involvement of different stakeholders in outbreak communication, this task of identifying and mapping stakeholders calls for a multi-angle approach.

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[6] World Health Organization, statement to the press by WHO Director-General Dr. Margaret Chan "World now at the start of 2009 influenza pandemic, 11 June 2009, available from http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html

[7] World Trade Organization, WTO Members discuss trade responses to H1N1 flu, 25 June 2009, available from http://www.wto.org/english/news_e/news09_e/sps_25jun09_e.htm

[8] World Tourism Organization, UNWTO Review and preparation exercise "Travel and tourism under pandemic conditions", 26-27 August 2009, available from http://www.unwto.org/rcm/pub/en/pdf/REPORT.pdf

[9] South African Department of Health - Factsheet: Health readiness for 2010 World Cup, 17 February 2010, available from http://www.info.gov.za/issues/world_cup/health_factfile.htm

The overall objective of task T2.1 – *Stakeholder Mapping* is to perform a full stakeholder analysis (identification and mapping), and as a second step to create a directory of stakeholders in outbreak communication, including representatives from various organisations, institutions and other entities relevant to outbreak communication. It should be clarified at this stage that outbreak communication is as much intertwined with vaccination strategies, as language is with culture. In fact, this was illustrated in a report commissioned by the European Commission (DG Health & Consumers), aiming to capture and assess the diverse pandemic vaccination strategies developed by the Member States, with special emphasis on communication issues (European Commission, 2010). The implementation of vaccination programmes and effectiveness of outbreak communication strategies involved are processes that require multiple stakeholder involvement, before the general public is reached.

The following section gives the general frame of a communicable disease outbreak in relation to public health risk and crisis communication in public health emergencies, and then proceeds with contextualising the concept of stakeholders in the field of public health emergencies and outbreak communication, providing definitions and highlighting different aspects to be considered for the analysis of stakeholders in the scope of this report.

2. OUTBREAK COMMUNICATION IN THE 21st CENTURY

The previous section discussed that globalisation was primarily driven by the inherent need of trade and business sector to create networks of contacts and expand to new horizons; the promise of a new market and fresh resources to exploit. The first forms of globalisation date back to the 2nd millennium BC, with the perception or boundaries of the ancient known world actually being defined by merchants who travelled along the already established routes and commercial ports. It could be argued that during those times, merchants (or carriers) were performing – even unconsciously – a process of risk assessment, weighing the costs and benefits of diverting their route, or even proceeding to explore new ones. Nonetheless, business trade as process was not limited only in transportation of goods, but as we discussed before, also in the transportation of communicable diseases, a calculated risk that people had to take, toward the fulfilment of a greater purpose.

2.1 Risk and crisis communication

While 'risk assessment' remains a core process in the strategic management of corporations, agencies or even public authorities, the revolution in the information and communication technologies during the last few decades, has been a decisive factor for the emergence of another risk-related practice, that of 'risk communication'. As part of a risk-based approach developed jointly by WHO and FAO, in order to ensure safety of foods for consumers, risk communication is seen as a major component of the risk-analysis framework, which includes two other components: risk assessment and risk management. As described by WHO: "Risk communication is an interactive process of exchange of information and opinion on risk among risk assessors, risk managers and other interested parties. Risk communication is an integral and ongoing part of the risk analysis exercise, and ideally all stakeholder groups should be involved from the start. Risk communication makes stakeholders aware of the process at each stage of the risk assessment. This helps to ensure

that the logic, outcomes, significance and limitation of the risk assessment are clearly understood by all the stakeholders [...]".[10]

The European Commission (DG Health & Consumers) definition on 'risk communication' moves along the same lines as WHO. In particular, the EC provides a shorter, yet more comprehensive description, since more groups of stakeholders are explicitly identified as interested parties: "Risk communication means the interactive exchange of information and opinions throughout the risk analysis process as regards hazards and risks, risk-related factors and risk perceptions, among risk assessors, risk managers, consumers, businesses, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk managements decisions."[11]

Of course, risk communication is not limited in those definitions; rather, definitions are shaped and refined according to the needs or the scope of the various institutions and agencies. For instance, the National Research Council of the United States described risk communication in the late 1980s as "an interactive process in which information and opinions are exchanged among individuals, groups and institutions" (National Research Council, 1989). Another relevant description of risk communication was given by the U.S. Public Health Service in the mid-1990s, which described it as "partnership and dialogue of government and industry with the public", and continues by stating that that risk communication is "[...] a complex, multidisciplinary and multidimensional information exchanging process [...] to give citizens necessary and appropriate information and to involve them in making decisions" (U.S. Public Health Service, 1995, p. 1).

It is important to note that most of risk communication definitions had been produced prior to major communicable disease outbreaks in the 21st century (i.e. SARS, H5N1, H1N1), yet these definitions seem to be quite inclusive, with direct application in situations of pandemics and is particularly relevant to the stakeholder analysis exercise that forms part of this task. All definitions highlight the interactive and complex nature of this strategic process and recognises the value of investing to transparent communication and continuous flow of information between the interested parties involved. As we have entered the Information and Communication Age, this process can be considered as salient in emergencies like communicable disease outbreaks, where the general public is more actively involved than ever, represented through filtering of information received by the authorities, and constantly seeking for trustworthy sources and transparency in the procedures followed. As suggested in a study by Alyusina and Kucheruk (2010), the purpose of risk communication is not about confirming or convincing the general public about the validity of claims made in relation the 'reality' of a risk, but rather to support the bilateral nature of this process and foster discussion between all parties concerned, by means of circulating relevant information (one-way communication), engaging to dialogue (two-way communication) and/or active cooperation in the decision-making process.

As an extension to risk communication as a strategic process, it is worthy to make a quick reference to the four major risk communication theories, which are: a) Trust Determination Theory, b) Mental Noise Theory, c) Negative Dominance Theory, d) Risk Perception Theory. These four theories have

[10] World Health Organization, risk communication, major component of the risk analysis exercise <http://www.who.int/foodsafety/micro/riskcommunication/en/>, viewed 18 June 2012.
[11] European Commission (DG SANCO), Definition of risk communication as part of risk assessment <http://ec.europa.eu/health/ph_risk/risk_com_en.htm>, viewed 3 July 2012.

been described and compared in the context of communicable disease outbreaks and bioterrorism (Covello, Peters, Wojtecki, & Hyde, 2001), but most importantly, these theories were 'distilled' by Covello and Allen (1988) to produce the "7 cardinal rules of risk communication" (Box 1),for the use of emergency planners and decision-makers. This set of rules points to another direction with regard to stakeholders and their role in situations of emergency. It is made rather explicit that is critical for the general public and the media to be effectively involved in the process of bringing into effect any intervention, in response to a public health emergency such as a global-scale pandemic.

Box 1: The seven cardinal rules of risk communication

1. **Accept and involve the public as a legitimate partner.**
   The ultimate goal of the communication strategy is to produce an informed public, not to defuse public concerns or replace actions.
2. **Plan carefully and evaluate your efforts.**
   Different goals, audiences and media require different actions.
3. **Listen to the public's specific concerns.**
   People often care more about trust, credibility, competence, fairness and empathy than about statistics and details.
4. **Be honest, frank and open.**
   Trust and credibility are difficult to obtain; once lost, they are almost impossible to regain.
5. **Coordinate and collaborate with other credible sources.**
   Conflicts and disagreements among organizations make communication with the public much more difficult.
6. **Meet the needs of the media.**
   The media are usually more interested in politics than in risk, in simplicity than in complexity, and in danger than in safety.
7. **Speak clearly and with compassion.**
   Never let efforts prevent acknowledgement of the tragedy of an illness, injury or death. People can understand risk information, but they may still not agree. Some people will not be satisfied.

Note. Adapted from *Seven cardinal rules of risk communication* by V. T. Covello & F. Allen (Eds.), 1988, Washington, DC: United States Environmental Protection Agency, Office of Policy Analysis.

In the wider context of a pandemic, risk communication is a process where public authorities act proactively by taking all necessary measures to better prepare the general public about the imminent threat, promoting a positive behavioural response, especially with regards to vaccination. The roles and level of involvement of the various stakeholders from international organisations, public authorities and the industry are rather well-defined. However, we need to consider that in many occasions the risk can transform into a crisis. And if this is something to be expected by the majority of experts in emergency preparedness and response, it is difficult to predict or determine the new dynamics that will be formed between the various stakeholders, especially in the case of infectious disease outbreaks, where the 'enemy' is silent and invisible as compared to other disasters or emergencies. Recent pandemics have shown the level of mobilisation and co-operation required between various stakeholders, from individuals to public authorities, and international organisations.

Another approach considered to be paramount in the field of risk communication is the 'Hazard Versus Outrage' model, developed by Peter Sandman in 1993. This model expands to recognise the general public as a key player in risk communication, and the fact that individuals need to be approached as groups, or 'publics', belonging to a wider group of stakeholders such as elected officials, activists, media, concerned citizens, and others (Sandman, 2012). This points to the uniqueness and particularities of different groups of stakeholders, in relation to the variation displayed in behavioural response and general attitudes. It should not be overlooked the fact that the emergence of new social media have brought new dynamics in communication between what is considered generally as 'public' and the experts. Especially in cases of emergency, the groups of individuals or communities can assume (in a structured way or spontaneously) different roles and respond in ways that can facilitate or obstruct the work of the authorities.

Going back to the Sandman's (2012) model 'Hazard Versus Outrage', the point of focus would be the 'outrage' factor, referring to the (justifiably) emotional and explosive reaction of the public toward the agent – communicator of risk. Sandman (2012) lists several components of public outrage (Box 2), which significantly enriches our understanding on the potential difficulties that can arise in the implementation of strategies and policies by competent authorities.

Box 2: Components of outrage

1. Voluntary or coerced?
2. Natural or industrial?
3. Familiar or exotic?
4. Not memorable or memorable?
5. Not dreaded or dreaded?
6. Chronic or catastrophic?
7. Knowable or not knowable?
8. Controlled by me or by others?
9. Fair or unfair?
10. Morally irrelevant or morally relevant?
11. Can I trust you or not?
12. Is the process responsive or unresponsive?
13. Effect on vulnerable populations.
14. Delayed vs. immediate effects.
15. Effect on future generations.
16. Identifiability of the victim.
17. Elimination vs. reduction
18. Risk-benefit ratio.
19. Media attention.
20. Opportunity for collective action.

Note. *From responding to community outrage: Strategies for effective communication* by P. M. Sandman (Ed.), 2012, American Industrial Hygiene Association.

The majority of outrage components mentioned above have been of direct relevance during the risk communication process during the most recent H1N1 (2009) pandemic. In the frame of taking preventative measures, the public opposition or non-compliance with immunisation strategies put forward by officials has some extensions to the delays in the distribution of the vaccines that was reported in many countries, while misconceptions and distrust towards the effectiveness of vaccines progressively started to be cultivated in the conscience of the public. Hence, as the outrage was growing from the side of individuals and communities alike, and in combination with the wide use of social media and other two-way communication vehicles, the general public also started to becoming more involved in the process, greatly influencing priorities and actions taken by the authorities, thus assuming the role of an 'external' stakeholder. This takes us back to the discussion on globalisation and process of homogenisation; as much as it is important in risk communication to make it an interactive process with involvement of all stakeholders, from public health officials to the public, it is also required to consider cultural values, norms, beliefs and experiences, and a series of other parameters (or components) for approaching more effectively the different sub-populations of a community, where more time and efforts need to be invested by public health authorities, in proportion with the various official and unofficial sources of information reaching the ears of people.

Crisis communication is perceived to be a much more demanding process, considering also the fact that goes through different phases and therefore, communication strategies might need to be readjusted depending on the public response. Although the analysis of crisis communication is outside the scope of this task, it is of particular relevance the degree of involvement and change of dynamics between those same key stakeholders that were described in risk communication. Considering that all possible means of communication are employed during a crisis that occurs unexpectedly, it comes as no surprise that online and traditional means of communication take a leading role as a communication channel which ensures the open flow and exchange of information.

With respect to the procedure of communicating information to the public (particularly risk communication), there is a science-based tool created for public health officials and emergency responders, called 'message mapping'. Its function is to effectively engage and accurately inform the general public, by delivering sets of organised statements or messages, that address likely questions and concerns in an emergency, while controversies and misunderstandings are omitted (U.S. Environmental Protection Agency, 2007). Effectively, this reflects the first best practice (cardinal rule) in risk communication, presented earlier. Of course, the type and nature of stakeholder conveying those messages is also important, with most recent example the influenza pandemic (H1N1) where national health authorities were perceived to be less trustful sources of information for the pandemic, compared to health professionals and experts[12]. It is not a coincidence that Covello (2002) considered as core process and first step in message mapping the identification of key stakeholders early in the process, while the same is also evident in the cases of crisis communication.

The identification of all stakeholders involved in outbreak communication and vaccination strategies is one of the core objectives in this task. The overview of some of the qualitative characteristics in risk and crisis communication have underlined the interactive character, as well as the polyphony and diversity of stakeholder groups involved, and the strong partnerships that need to be formed for

[12] Flash Eurobarometer 287 – The Gallup Organisation, Eurobarometer on Influenza H1N1, Flash EB Series no. 287, Hungary, 2010, < http://ec.europa.eu/public_opinion/flash/fl_287_en.pdf>, viewed 8 May 2012.

implementing effective public health interventions during a communicable disease outbreak. Another interesting point is the fact that general public is seen as key player in situations of crisis. Indeed, following the growth of social media, the general public moved away from the stereotype of being considered as 'passive recipient' of health interventions; rather, is significantly empowered as a stakeholder group since any person can virtually influence opinions and decisions of others (e.g. anti-vaccination groups, pandemic denialists etc.), depending on the type of narrative and communication channel that is used by that person. Finally, the role of the media and the internet is quite central in the process, and the global reach that media can achieve should be regarded. Media also classify as key stakeholders, which follow a distinct deontological code that can challenge the implementation of a public health intervention, especially during a pandemic when most transparency is required in every step taken by public health officials and competent authorities. Additionally, in one of the Forums organised by WHO/Europe after the SARS outbreak, special reference was made to the various 'legitimate' stakeholders that need to be considered in crisis communication, such as health journalists and health executives.

2.2 Communicable disease outbreak communication

Moving from general to specific, i.e. from risk and crisis communication to communicable disease outbreak communication, is comparable to making use of a filter that allows other dimensions to come into view. Certain components of risk and crisis communication are directly relevant to outbreak communication, but unique features of an infectious disease outbreak create another layer that needs to be explored. Outbreaks are described by WHO (2004) as "[...] *urgent emergencies accompanied by rapid efforts to save lives and prevent further cases"*. Disease outbreaks differ from other emergencies characterised by one major event such as an earthquake, flood or volcanic eruption, where actually the emergence of a disease outbreak can be in the aftermath of a natural disaster. The idiosyncrasy of a disease outbreak is summarised in the last words of WHO definition – *prevention of further cases*. In addition to this, WHO summarises the unique features of an outbreak as follows:

- Urgent public health emergency
- Unpredictable
- Alarming for the public
- Socially and economically disruptive
- Strong political dimensions
- Spread has behavioural component
- Eminently newsworthy

These features portray the increased complexity and challenges in outbreak communication, as other variables are identified as relevant, such as the political context, cultural factors and economical implications, which could be decisive in the effectiveness of strategies put forward, considering that collaboration between different entities is essential to overcome any kind of emergency or crisis. WHO also identifies for public health authorities five principles in outbreak communication, namely trust, early announcement, transparency, listening and planning (WHO, 2008). Furthermore, in this same report is acknowledged the level of penetration of globalisation in today's society, and drawing from the experience of the SARS outbreak experience, WHO endorses the notion of "think global, act local", meaning that local actions can have international repercussions (WHO, 2004).

While these guidelines and principles aim toward greater public resilience and the enhancement of communication between public health authorities and the general public, it should not be overlooked that nowadays, in the age of social media and great availability of information resources, the majority of the public also claims some degree of 'pseudo-scientific expertise' in the field, people make judgments and have opinions about the nature of diseases and health intervention strategies, including vaccination, based on the information retrieved from the internet and other sources of direct communication.

Another differentiation made between crisis and outbreak communication is the insertion of 'notification' as a key step in the process, where decision makers need to communicate and regularly keep updated specific groups of stakeholders - such as non-governmental organisations (NGOs) - about developments and strategic interventions (OIE, 2011). The NGOs have a distinct place as stakeholders in public health emergencies, as in many occasions these organisations are in a better position to take direct initiatives and approach more easily – and effectively – certain populations of the community.

As we move closer to stakeholder analysis in the context of this report, by having viewed outbreak communication through the magnifying glass of risk and crisis communication, a number of common stakeholder groups were unveiled. Compared to other emerging pandemics of the industrialised society, including non-communicable diseases such as the obesity epidemic and cardio-vascular disease, the recent influenza pandemic (H1N1) was characterised by the unprecedented level of mobilisation and collaboration between different groups of stakeholders, which meant the wider participation of yet more people and organisations as active agents or stakeholders. Thus far, and based on what has been discussed earlier in the report, it becomes apparent that the network of stakeholders and people involved in communicable disease outbreak communication has broadened to new extents, as a result of the technological advancement and revolution in communication, putting the world on a different scale, as well as certain attributes of globalisation and the need to build mutual understanding between governments and policy makers, of what constitutes a public health emergency of international concern. Within this context, and following the most recent examples of the SARS and influenza pandemics, as it has been discussed earlier, the societies around the world have witnessed the considerable loss of sovereignty over health intervention strategies in response to the outbreaks, as replaced by international regulations[13], while the internet, social media and mass media proved to be decisive and powerful tools in shaping public opinion and influencing final decisions made, especially with regard to immunisation.

[13] WHO published in 2008 the revised and consolidated International Health Regulations (IHR), incorporating the text of *World Health Assembly resolution WHA58.3, the version of the Health Part of the Aircraft General Declaration that entered into force on 15 July 2007, appendices containing a list of States Parties and State Party reservations and other communications in connection with the IHR (2005)*. These Regulations aimed to provide a framework for mobilising support from governments and donors and for responding to an influenza pandemic, with Member States obliged to co-operate by following this set of regulations, and make all efforts to maintain global health security. The IHR have been criticised as 'opening the arena' to new actors with little relevance to health issues, representing security (bio-terrorism) and economical (trade) interests (Calain, 2007).

3. STAKEHOLDER ANALYSIS IN THE FRAME OF THE "TELL ME" PROJECT

Contrary to large-scale projects, organisations, businesses or other entity that follows a structured model, adhering to a specific set of rules and principles, the stakeholder analysis in outbreak communication does not follow the conventional path. While there is a clear hierarchical structure in decision-making processes, operations management and public health communication strategies in place, the unpredictable nature and course of a pandemic outbreak, as well as the proven impact of such an event across different sectors and society as a whole, requires a significantly different and comprehensive approach in the identification and mapping of stakeholders. The recent appeals made by international organisations and agencies for effective collaboration and harmonisation of processes on EU level, creates yet more interconnections (and interdependencies) between traditional and newly emerging groups of stakeholders, perhaps with different priorities and attitudes towards public health emergencies, or risk and crisis communication. To avoid complications and ambiguities in this multiple-stakeholder environment, the stakeholder analysis will comprise of two layers, with 'outbreak communication' forming the nucleus of our approach, encircled by the 'vaccination' theme, which is a branch of outbreak communication in the form of preventative measures. Thus, it is rather inevitable that most of the stakeholders identified in outbreak communication will also be involved in vaccine implementation strategies, but this underlines the close inter-connection between the two processes.

In the following sections the methodological framework is provided for the stakeholder analysis in the TELL ME project, by contextualising better this technique and crystallising the notion of a stakeholder in outbreak communication. As a general rule, and based on what has been discussed already in this report, groups of stakeholders will not be classified in accordance with the conventional schemes that exist (i.e. primary stakeholders, secondary stakeholders etc.) – as the event of a pandemic is a global-scale crisis and therefore should be seen in its entirety, avoiding rigidities in stakeholder mapping and identification. In addition, a pandemic outbreak escapes the customary frame of stakeholder typology even compared to other types of emergencies, since this event keeps unfolding with the passage of time, with the actual threat being an invisible agent.

3.1 The technique of stakeholder analysis

Stakeholder analysis is a self-explanatory term, which describes the technique or process for identifying and assessing the influence and importance of key people, groups of people or organisation that may significantly impact the success of an activity or project (Friedman and Miles, 2006), in which case is outbreak communication and behavioural responses by the general public towards vaccine implementation strategies. The stakeholder analysis also provides the framework where areas of conflict of interest can be identified, and assists in better understanding the interdependencies and interconnections between different groups of stakeholders, so that already existing and potentially new partnerships can be detected.

The reasons for conducting a stakeholder analysis have been summarised by the WHO[14] as follows:

[14] The Department of Health Action in Crises Department (WHO) has published a series of technical guidelines and provided training in the context of strengthening capacity for the international humanitarian community to address public health

- Identify people, groups and institutions that will influence the project (positively or negatively);
- Anticipate the kind of influence, positive or negative, these groups will have on the project;
- Develop strategies to get the most effective support possible for the project and reduce any obstacles to successful implementation.

Depending on the nature of each project, certain aspects or stakeholder attributes become more salient in the process than others, however the overall idea is to identify and map all groups of stakeholders in the field of outbreak communication, whether these are active or passive, internal or external, policy makers, implementers or receivers of vaccine strategies and messages.

It is important to note the fact that public participation is becoming increasingly embedded in national and international policies as decision-makers recognise the need to understand who is affected by the decisions and actions they take, and who has the power to influence their outcome. With respect to the identification and involvement of different groups of stakeholders, the European Commission always endorsed the idea of open communication with the public, through consultations and participation in discussions, where every person could contribute and play an active role in the formulation of policies[15].

Recently, the European Commission (DG Health & consumers) held a stakeholder consultation on health security in the European Union, addressing much relevant issues to public health emergencies, such as pandemic influenza preparedness, cross-border health threats and transposition of the IHR (2005) into national legislation (European Commission, 2011). This consultation led the European Commission to adopt a legal proposal in the form of a Decision, to better protect European citizens from a wide range of serious cross-border health threats[16]. The process of consultation is of great value and relevance to this task, since it acts also as a preliminary form of stakeholder analysis, as the European Commission identifies specific target groups from which comments are most welcome. Indicatively, for this stakeholder consultation on health security in the European Union, the target groups identified were national, regional and local authorities, health institutions, NGO's, interest groups, enterprises and individual stakeholders.

The involvement of stakeholders in any project, as well as the development of strategies for effective engagement, is a basic step in stakeholder analysis. However, this report focuses primarily on the first two stages of conducting a stakeholder analysis; namely, the identification and mapping of stakeholders. As a next step in this report, it is paramount that we contextualise the term of 'stakeholder', before proceeding to the step of identification, in order to understand better which groups are represented (or potentially can be represented) in outbreak communication.

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priorities in emergencies and crises, available from http://www.who.int/hac/techguidance/training/stakeholder%20analysis%20ppt.pdf

[15] Your voice in Europe – European Commission single-access point <http://ec.europa.eu/yourvoice/index_en.htm>, viewed 15 June 2012

[16] European Commission, Proposal for a Decision of the European Parliament and of the Council on serious cross-border threats to health of 8 December 2011 [COM(2011) 866 final], available from http://ec.europa.eu/health/preparedness_response/docs/hsi_proposal_en.pdf

3.2 Building the stakeholder framework – Definitions

Similarly to an excavation where new findings come to light with the progress of works, the previous sections analysing risk and crisis communication in a globalised environment, unveiled a number of stakeholders relevant to outbreak communication. More context is required however, for clearly establishing all groups of stakeholders as part of the stakeholder identification exercise. Following this view, it would be beneficial to go back and understand what constitutes a stakeholder in general, with ultimate goal to provide a working definition for 'stakeholders' in the frame of the "TELL ME" project.

In the last few decades, the stakeholders as term or concept has achieved widespread popularity among different disciplines and sectors, extending beyond the – ever-expanding – business and management environment. It was back in the 1980s, when R. Edward Freeman first defined stakeholders as *any group or individual who can affect or is affected by the achievement of the organisation's objectives* (Freeman, 1984). The Business Dictionary[17] expands on this definition to also include 'organisations' as another type of stakeholder who can affect or be affected not only by the achievement of objectives, but also specific 'actions' and 'policies' put forward. More attempts to define stakeholders have been made in the past within the structural boundaries of an organisation, considering level of influence (Mitchell, Agle and Wood, 1997) or contribution (Post, Preston, Sachs, 2002) as additional key attribute of stakeholders. The World Bank[18] takes yet another approach, defining stakeholders for the purpose of a consultation as *groups of people who share a common interest, [...] but within these groups, there are sub-categories of stakeholders with differing interests which they may or may not be prepared to subsume in the general collective interest*.

Evidently, the majority of 'stakeholder' definitions presented in the last three decades have an orientation towards enterprises/large corporations with clear organisational structure and business focus. This is partly explained by the fact that organisations and decision-makers have seen the benefits of stakeholder engagement, particularly in the business environment where competition is particularly intense, and especially after entering the Information Age. The same is also true for the European Commission as was discussed in the previous section.

Despite the differences and certain ambiguities in the definitions of stakeholders, also in other fields such as sociology and politics (Friedman and Miles, 2006), is rather interesting the attempt made across different sectors, to address the dual impact of decisions or actions taken by decision-makers. In support of this claim, a 'stakeholders' definition provided by WHO makes an explicit reference to the decision-making process, stating that stakeholders are *those who might be affected by, or have a significant interest in, the process of decision-making about the topic and the implications of decisions reached* (WHO, 2008, p.30). Hence, we can conclude that the emerging pattern is relevant to the level of impact of a decision or action, with stakeholders being capable to affect but also to be affected, while the impact of a decision or action can be felt either directly or indirectly. This all-inclusive conceptualisation of stakeholders at core makes a distinction between active and passive

[17] The Business Dictionary, <http://www.businessdictionary.com/definition/stakeholder.html#ixzz1zeLNbs5k >, viewed 27 May 2012.
[18] The World Bank , Stakeholder consultation and participation in MSWM planning , available at http://www.worldbank.org/urban/solid_wm/erm/Annexes/US%20Sizes/Annex%201.1.pdf

stakeholders. Nevertheless, this type of categorisation might be rather simplistic or too generic, considering the complex nature of outbreak communication as a process.

In view of the abovementioned definitions, and within the frame of providing a working definition for stakeholders to reflect the main objectives of this task, as a stakeholder is understood:

> ***Any person or group of persons, national or international organisation, institution or any other internal or external entity which is directly or indirectly affected and/or is actively or passively involved in any stage or operational process prior and during the outbreak of an infectious disease (including the chain process for immunisation), vis-à-vis outbreak communication tactics and public behavioural responses towards the disease pandemic.***

3.3 Stakeholder identification

The first step in the stakeholder analysis process is to identify those relevant stakeholders in the field of outbreak communication, as well as the chain process for immunisation. For this reason, we shall take a top-down approach, where outbreak communication is considered and perceived in its entirety, as a system, consisting of various critical components. For clarity purposes, and to reduce the probability of leaving out some key stakeholders in this field, we also provide descriptions of the main groups of stakeholders identified in the process, and how these relate in the context of a pandemic. Considering the unprecedented national and international mobilisation witnessed during the H1N1 (2009) pandemic, along with the various responses and measures taken by organisations and institutions around the globe, this event will be used as compass to explore more in-depth this complex environment of outbreak communication, in terms of stakeholders involved. Thus, stakeholder identification will follow the preparedness and response stages of the most recent pandemic outbreak, where communication had been central in the process.

3.3.1 Methodology for stakeholder identification

The starting point for identifying relevant organisations and individuals in the field of outbreak communication is to consider those stakeholders operating on an international level, who have been explicitly and directly involved in any of the stages associated with the pandemic outbreak. Those 'visible' stakeholders was possible to detect through reading various assessment reports, statements, scientific papers and documents published by the European Commission. These documents highlighted at times intra-organisational collaborations, which was rather useful in understanding the inter-connections between stakeholders in pandemic outbreaks. Moving to visible stakeholders on a national level, the same strategy was employed, considering also statistical data by the EUROBAROMETER, identifying relevant national agencies involved in the implementation of communication and immunisation strategies.

On a second level, we mined various databases of key European Institutions and Agencies relevant to communicable disease outbreaks, such as European Centre for Disease Prevention and Control (ECDC) and the European Medicines Agency (EMA), as well as other European projects with topics related to communicable diseases and/or vaccination, such as VENICE II. This procedure helped to identify yet more pan-European and national organisations as stakeholders, which proved to be valuable sources for obtaining also names of key individuals to be included in the 'Stakeholder Directory' (ANNEX I). At this stage, also European umbrella institutions went through a filtering

process, and based on their profile and type of activities identified as actual or potential stakeholders in future pandemic outbreaks.

As key stakeholders in the process were identified the social media (e.g. Facebook, YouTube, Twitter etc.) and mass media (e.g. television, radio, newspapers etc.), as well as the pharmaceutical industry which is closely linked to vaccine strategies employed by government officials on a national level. In fact, as we move towards regional and local public authorities, several layers of stakeholders are revealed with significant influence on the behavioural attitudes of the general public towards health interventions associated with the outbreak.

Finally, the "snowballing" technique has been used as another method of identifying other stakeholders in this field, by getting in contact with key some of the actors already identified in previous stages, to provide us with more names and contact details from various national and international organisations.

3.3.2 Stakeholders in outbreak communication

Putting together all data collected from the abovementioned procedures, a first attempt was made to categorise on a chart, key groups of stakeholders in outbreak communication and immunisation (Fig. 1). With regard to the 'International organisations' and 'European associations', it should be pointed out that more organisations and associations are involved or become affected (directly or indirectly) during a pandemic outbreak, however at this stage we have chosen to include those having direct influence and/or interest in the process of outbreak communication.

The following working definitions apply for the broad categories of stakeholders appearing on the chart:

- International Organisation refers to any type of governmental or non-governmental organisation that operates on a global scale and comprises of various member (sovereign) states, adhering to international laws or treaties.
- European Association refers to any umbrella organisation that collectively represents various other national associations and industries that operate on European level.
- Media and Internet refers to any type of one-way or two-way communication channel used for broadcasting or narrowcasting any kind of information relevant to a communicable disease outbreak. This category also include scientific journalists.
- Industry and Research refers to any type of business or enterprise involved in the chain process for immunisation, from manufacture to storage.

In all, as part of this exercise we shall include any type of stakeholder that:

- shapes public perceptions about disease outbreaks and immunisation, including the media, activists and opinion-makers on a community level;
- influences general public behaviour in response to disease outbreaks and immunisation, including experts and healthcare professionals;
- is involved in the manufacture, distribution, storage, purchase or administration of vaccines;
- is responsible for implementation of outbreak communication strategies, either through formulation of policies and guidelines, or other material of informative nature.

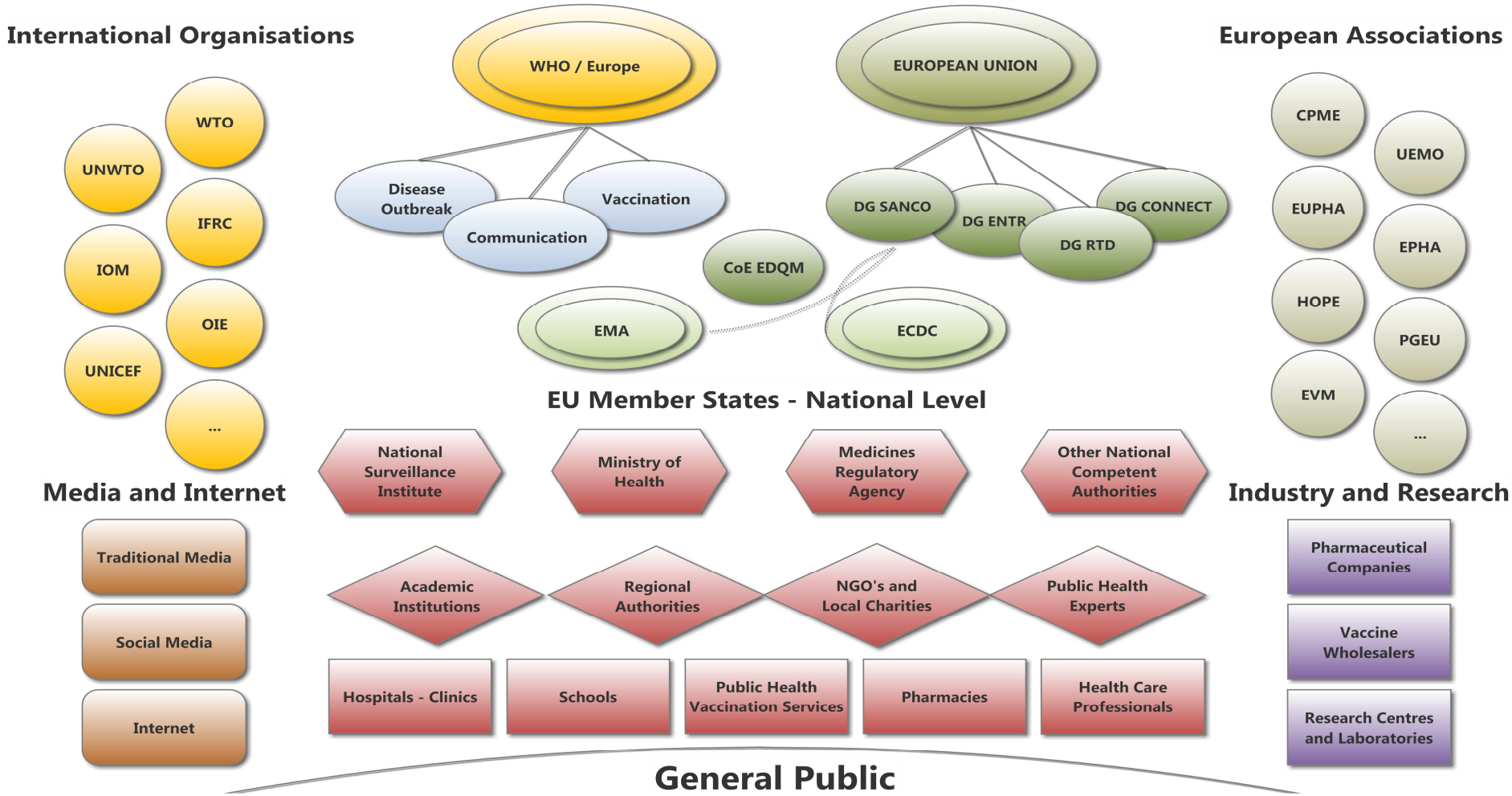

Fig. 1: Key groups of stakeholders involved in outbreak communication and the immunisation process.[19]

[19] **WHO:** World Health Organization, **DG SANCO:** Health and Consumers, **DG ENTR:** Enterprise and Industry, **DG RTD:** Research and Innovation, **DG CONNECT:** Communications Networks, Content and Technology, **EMA:** European Medicines Agency, **ECDC:** European Centre for Disease Prevention and Control, **EDQM:** European Directorate for the Quality of Medicines and Healthcare, **WTO:** World Trade Organization, **UNWTO:** World Tourism Organization, **IFRC:** International Federation of Red Cross and Red Crescent Societies, **IOM:** International Organization for Migration, **OIE:** World Organisation for Animal Health, **UNICEF:** United Nations Children's Fund, **CPME:** Standing Committee of European Doctors, **UEMO:** European Union of General Practitioners, **EUPHA:** European Public Health Association, **EPHA:** European Public Health Alliance, **HOPE:** European Hospital and Healthcare Federation, **PGEU:** Pharmaceutical Group of the European Union, **EVM:** European Vaccine Manufacturers.

3.4 Key groups of stakeholders in outbreak communication

As a next step in the identification of stakeholders, and for better preparing the grounds in relation to the final objective of this task, i.e. the creation of a 'Stakeholder Directory' (ANNEX I), a clear categorisation of the groups of stakeholders is required, based on the schematic representation of stakeholders in Figure 1, and by taking into consideration also a stakeholder template produced by ECDC for evaluations of national pandemic responses in European Union and EEA Member States[20].

Next we describe briefly every organisation, institution, agency or other organisational entity that classifies as relevant stakeholder, making a clear categorisation and distinction between those different types of stakeholders[21]. The description of organisations below, creates leads to a preliminary mapping of stakeholders, which will be analysed more in detail later in the report.

3.4.1 European Institutions and Agencies

European Commission – DG Health and Consumers (SANCO)
The Directorate-General for Health and Consumers is responsible for the implementation of European Union laws on the safety of food and other products, on consumers' rights and on the protection and improvement of public health. As regards public health, the DG is responsible and concerned with the following domains: ensuring health security, pharmaceuticals, improving health care, taking action against diseases, risk assessments and more.

The DG Health and Consumers is a key player in public health emergency preparedness and response, and was actively involved during all stages of the H1N1 (2009) pandemic. The DG links directly with ECDC and EMA.

Webpage: http://ec.europa.eu/dgs/health_consumer/index_en.htm

European Commission – DG Enterprise and Industry (ENTR)
The Directorate-General Enterprise and Industry is working towards five general objectives: a) to strengthen Europe's industrial base and promote the transition to a low carbon economy; b) to promote innovation as a means to generate new sources of growth and meet societal needs; c) to encourage the creation and growth of SMEs and promote an entrepreneurial culture; d) to ensure an open internal market for goods; and e) to support the European presence in space. In addition the DG Enterprise and Industry has a key role to play in the implementation of Europe 2020.

The DG Enterprise and Industry directly associates with relevant, key industry sectors, such as the healthcare industries, biotechnology, security research and development, and tourism. Until January 2010, pharmaceuticals had been under the responsibility of the DG, and in this context the DG collaborated closely with the European Medicines Agency (EMA) during the H1N1 (2009) pandemic.

Website: http://ec.europa.eu/enterprise/index_en.htm

[20] This template is available in a form of Excel spreadsheet and can be accessed by following this link: http://www.ecdc.europa.eu/en/healthtopics/H1N1/Documents/1002_template_pandemic_evaluations_ECDC.xls
[21] Note that information presented about each organisation/institution/agency was retrieved by the respective official webpage, statements made about the vision and mission of each, as well as relevant other sources which provided information on the involvement during the most recent H1N1 (2009) pandemic.

European Commission – DG Research and Innovation (RTD)

The Directorate-General for Research and Innovation generally supports research and innovation through European Framework Programmes, coordinates and supports national and regional research and innovation programmes, contributes to the creation of the European Research Area by developing the conditions for researchers and knowledge to circulate freely, and supports European organisations and researchers in their cooperation at international level.

The DG Research and Innovation could be considered as an 'invisible' stakeholder in outbreak communication, but plays a very significant role as the DG drives European research and supports initiatives relating to public health, medical research and infectious diseases. In addition, the DG promotes and supports the establishment of European networks of collaboration between various types of institutions and organisations, which is crucial for effectively addressing societal issues that can become relevant during outbreak communication.

Website: http://ec.europa.eu/research/index.cfm?lg=en

European Commission – DG Communications Networks, Content and Technology (CONNECT)

The Directorate-General CONNECT focuses on research, policy and regulation on the areas of information and communication technology and media. Its regulation has cultural, societal and economic objectives, and covers some of the largest economic sectors in Europe, as well as some of the most visible. Of particular relevance are Directorates G (Media and Data) and H (Sustainable and Secure Society). As highlighted in previous sections, fast and effective communication in pandemic outbreaks is critical, especially in the response phase of a disaster, and new capacities offered by digital technologies need to be fully realised in future events.

Website: http://ec.europa.eu/dgs/connect/index_en.htm

European Commission – Executive Agency for Health and Consumers (EAHC)

The Executive Agency for Health and Consumers (EAHC) is entrusted by the European Commission to implement the Health Programme. This is mainly done through financing four types of different actions: projects, conferences, joint actions and operation grants. The tasks of the EAHC expand to include actions in the field of consumer protection and training for safer food, while the key objectives of the latest Health Programme (2008-2013) included the improvement of citizens' health security, the promotion of health including the reduction of health inequalities, and the generation and dissemination of health information and knowledge. The EAHG works closely with the Directorate-General for Health and Consumers (DG SANCO).

Website: http://ec.europa.eu/eahc/index.html

European Centre for Disease Prevention and Control (ECDC)

The European Centre for Disease Prevention and Control (ECDC) is an agency of the European Union, aimed at strengthening Europe's defences against infectious diseases. The ECDC mission is to identify, assess and communicate current and emerging threats to human health posed by infectious diseases. In order to achieve this mission, ECDC works in partnership with national health protection bodies across Europe to strengthen and develop continent-wide disease surveillance and early

warning systems. By working with experts throughout Europe, ECDC pools Europe's health knowledge to develop authoritative scientific opinions about the risks posed by current and emerging infectious diseases.

Within the field of ECDC mission, the Centre: a) searches for, collect, collate, evaluate and disseminate relevant scientific and technical data, b) provides scientific opinions and scientific and technical assistance including training, c) provides timely information to the Commission, the Member States, Community agencies and international organisations active within the field of public health, d) coordinates the European networking of bodies operating in the fields within the Centres mission, including networks arising from public health activities supported by the Commission and operating the dedicated surveillance networks, and e) exchange information, expertise and best practices, and facilitate the development and implementation of joint actions.

ECDC played a pivotal role during the H1N1 (2009) pandemic in many different aspects, from providing technical guidance and recommendations to Member States, to surveillance and communication. In addition, the Centre published a number of reports and overall evaluations on the response during the outbreak. ECDC is in open contact with the European Medicines Agency (EMA), national regulatory and public health authorities, as well as the World Health Organization.

Website: http://www.ecdc.europa.eu/en/Pages/home.aspx

European Medicines Agency (EMA)

The European Medicines Agency (EMA) is a decentralised agency of the European Union, which is responsible for the scientific evaluation of medicines developed by pharmaceutical companies for use in the European Union. EMA issues scientific opinion in support of EU-wide marketing authorisations, provides advice on medicine-related issues and works with institutions and partner agencies on major European public health issues such as the H1N1 influenza virus.

EMA works various EU institutions such as the European Commission and the European Parliament, the European Centre for Disease Prevention and Control (ECDC) and national regulatory authorities across Europe. The Commission has worked with EMA to speed up the marketing authorisation procedure once a pandemic is declared. Because authorisations are based on limited data, the Commission has also worked with EMA, ECDC and other relevant stakeholders to create an effective system for monitoring adverse reactions once a vaccine is being used. In addition, EMA is in open contact with the World Health Organization (WHO), the World Organisation for Animal Health (OIE). Moreover, EMA works with the pharmaceutical industry in numerous ways, mainly in the context of the central authorisation procedures, which allows pharmaceutical companies to apply for a single marketing authorisation valid for all Member States in the European Union, but also supports research and development activities in the field of pharmaceutics. Finally, the Agency closely interact with healthcare professionals in various aspects of its work.

During the H1N1 (2009) pandemic, EMA had been one of the key players in the European Union, with regards to the authorisation and supervision of pandemic vaccines and antivirals, keeping the general public informed for the duration of the pandemic outbreak. EMA also was responsible for producing the EudraVigilance Reaction Monitoring Report, which was transmitted on a weekly basis to all

Member States, while a Pandemic Pharmacovigilance Rapid Response Expert Group (PREG) was established to respond to concerns and give advice to Member States.

Website: http://www.ema.europa.eu/ema/

3.4.2 International Organisations and Associations

European Directorate for the Quality of Medicines and Healthcare (EDQM) of the Council of Europe (CoE)

The EDQM of the Council of Europe is an international organisation that protects public health by enabling the development, supporting the implementation, and monitoring the application of quality standards for safe medicines and their safe use. The European Pharmacopoeia lists a wide range of active substances and excipients used to prepare pharmaceutical products in Europe, and is legally binding for all Member States. The EDQM is also responsible for a number of activities, in collaboration with the EU, related to Surveillance of Pharmaceutical Products marketed and distributed in Europe. As part of its surveillance activities for marketed medicines, the EDQM co-ordinates the European Network of Official Medicines Control Laboratories (OMCL); this activity was set up at the request of the EU. More than 100 Official Control Laboratories in nearly 40 countries collaborate in this network. This activity is essential in Europe to facilitate mutual recognition between countries of quality control tests carried out on medicines and ensures that patients receive the same quality of pharmaceutical products.

The EDQM works closely with the European Medicines Agency (EMA) and major European institutions, such as the European Commission (DG SANCO), the European Council and the Parliament.

The EDQM comprises of 36 member countries.

Website: http://www.edqm.eu/en/Homepage-628.html

World Health Organisation (WHO)

The World Health Organization (WHO) is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.

According to the 11th General Programme of Work (2006-2015): A Global Health Agenda, WHO fulfils its objectives through its core functions:

- providing leadership on matters critical to health and engaging in partnerships where joint action is needed;
- shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge;
- setting norms and standards and promoting and monitoring their implementation;
- articulating ethical and evidence-based policy options;
- providing technical support, catalysing change, and building sustainable institutional capacity;

- monitoring the health situation and assessing health trends.

The 'Global Influenza Programme' and the 'Global action plan for influenza vaccines' classify among the various influenza-related programmes and activities of WHO. Publication of reports and organization of world conferences on communicable diseases and immunisation are also on the WHO agenda. With regards to the H1N1 (2009) pandemic, WHO was among the key actors on a worldwide scale, coordinating actions and collaborating with European institutions and national public health authorities. WHO produced the International Health Regulations (IHR), which is an international legal instrument that is binding on 194 countries across the globe, including all the Member States of WHO. The IHR (2005) entered into force on 15 June 2007, and since that date countries are required to report certain disease outbreaks and public health events to WHO.

The WHO comprises of 194 member countries.

Website: www.who.int/

World Organisation for Animal Health (OIE)
The World Organisation for Animal Health is the intergovernmental organisation responsible for improving animal health worldwide. It is recognised as a reference organisation by the World Trade Organization (WTO). The OIE maintains permanent relations with 45 other international and regional organisation, including the European Commission and the World Health Organization (WHO).

The OIE has nine Reference Laboratories designated for avian influenza function as centres of expertise and standardisation of diagnostic techniques. In addition, the OIE has a dedicated web portal which groups in a single place all immediate notifications and follow-up reports on Highly Pathogenic Avian Influenza due to serotype H5N1 and/or other serotypes. This portal is kept up-to-date based on follow-up reports received by members countries around the world.

The OIE comprises of 178 member countries and territories.

Website: http://www.oie.int/en

World Trade Organisation (WTO)
The World Trade Organization (WTO) is an organization that intends to supervise and liberalize international trade. The organization deals with regulation of trade between participating countries; it provides a framework for negotiating and formalizing trade agreements, and a dispute resolution process aimed at enforcing participants' adherence to WTO agreements which are signed by representatives of member governments and ratified by their parliaments. Among the various functions of the WTO, perhaps the most important is that it oversees the implementation, administration and operation of the covered agreement, while it provides a forum for negotiations and for settling disputes.

Additionally, it is WTO's duty to review and propagate the national trade policies, and to ensure the coherence and transparency of trade policies through surveillance in global economic policy-making. Another priority of WTO is the assistance of developing, least-developed and low-income countries in transition to adjust WTO rules and disciplines through technical cooperation and training.

It is interesting to point out that the European Union is also a member, as WTO members do not have to be full sovereign nation members – as opposed to the World Health Organization where only countries can be considered as Members and territories as Associate Members. In the case of WTO, members must be a customs territory with full autonomy in the conduct of their external commercial relations.

WTO comprises of 156 member countries and territories.

Website: http://www.wto.org/

World Tourism Organisation (UNWTO)

The World Tourism Organization (UNWTO) is a United Nations agency which is concerned with the collection and collation of statistical information on international tourism. This organization represents public sector tourism bodies, from most countries in the world and the publication of its data makes possible comparisons of the flow and growth of tourism on a global scale. UNWTO plays a role in promoting the development of responsible, sustainable and universally accessible tourism, paying particular attention to the interests of developing countries. Furthermore, UNWTO encourages the implementation of the Global Code of Ethics for Tourism, with a view to ensuring that member countries, tourist destinations and businesses maximize the positive economic, social and cultural effects of tourism and fully reap its benefits, while minimizing its negative social and environmental impacts.

In the past, UNWTO had organised simulation exercises that showed the importance of properly integrating travel and tourism in pandemic preparedness plans, to mitigate the impact of health emergencies, especially in their international dimension[22]. UNWTO Risk and Crisis Management Programme is designed to assist members to assess and mitigate risks related to tourism, and moreover, to develop, plan and implement crisis management systems that will reduce the impact of and assist in the recovery from crises. UNWTO also has established the Tourism Emergency Response Network (TERN), which is a closely know grouping of the leading tourism associations of the world.

UNWTO has published a Toolbox for Crisis Communications in Tourism, and collaborates closely with other international organisations such as the World Health Organization (WHO), the International Organization for Migration (IOM) and the World Organisation for Animal Health (OIE), also within the context of United Nations activities such as the Central Fund for Influenza Action.

UNWTO comprises of 162 member countries and territories.

Website: www.unwto.org

United Nations International Children's Emergency Fund (UNICEF)

The United Nations International Children's Emergency Fund (UNICEF) is an intergovernmental organization that provides long-term humanitarian and developmental assistance to children and mothers in developing countries. In response to the avian influenza outbreak in 2005-2006, UNICEF, in collaboration with national governments, partners and a range of stakeholders including civil

[22] Press release: UNWTO recommends to review pandemic preparedness plans (29 April 2009) http://www.unwto.org/media/news/en/press_det.php?id=4051&idioma=E

society, sponsored communication campaigns in affected countries to bring critical information on pandemic preparedness to families and communities. In addition to supporting governments develop national pandemic preparedness plans, UNICEF has been working to strengthen vaccine and supplies delivery systems in selected countries as a means to ensure functional systems to rapidly deliver these supplies.

UNICEF collaborates closely with the World Health Organization (WHO) and the International Organization for Migration (IOM). Jointly, WHO and UNICEF developed outbreak communication strategies, which concerned behaviour change for pandemic preparedness (Flu-WISE) and pandemic recovery (Flu-CARE). Another campaign launched by UNICEF, relevant to an epidemic, was the 'Unite for Children, Unite against AIDS' campaign in 2005.

UNICEF is active in more than 190 countries and territories.

Website: http://www.unicef.org/

International Organization for Migration (IOM)
The International Organization for Migration (IOM) is the principal intergovernmental organization in the field of migration. IOM is dedicated to promoting humane and orderly migration for the benefit of all. It does so by providing services and advice to governments and migrants. IOM works to help ensure the orderly and humane management of migration, to promote international cooperation on migration issues, to assist in the search for practical solutions to migration problems and to provide humanitarian assistance to migrants in need, be they refugees, displaced persons or other uprooted people. The IOM Constitution gives explicit recognition to the link between migration and economic, social and cultural development, as well as to the right of freedom of movement of persons.

In response to the H1N1 (2009) pandemic IOM worked in collaboration with its member countries, the UN system and other international partners to ensure that migrant needs are included in national pandemic contingency plans, as migrants need to have access to health and social services including pandemic preparedness, mitigation and response strategies. To strengthen migrant and host communities' pandemic preparedness, mitigation and response capacity, IOM conducted social mobilization and training activities in countries in Asia, Africa and Latin America.

IOM comprises of 146 member countries.

Website: http://www.iom.int/jahia/jsp/index.jsp

International Federation of Red Cross and Red Crescent Societies (IFRC)
The International Federation of Red Cross and Red Crescent Societies (IFRC) is the world's largest humanitarian organization, providing assistance without discrimination as to nationality, race, religious beliefs, class or political opinions. The IFRC carries out relief operations to assist victims of disasters, and combines this with development work to strengthen the capacities of its member National Societies. The IFRC's work focuses on four core areas: promoting humanitarian values, disaster response, disaster preparedness, and health and community care.

In response to the most recent pandemics (H5N1 and H1N1 influenza), two parallel approaches were set up by the IFRC. First, helping communities to become more aware of the avian and swine influenza threats and know which preventive measures can be taken, and second, enabling National Societies to play a lead role in handling of the effects of a pandemic, using their close connection to communities and auxiliary role to their governments; this approach has been referred to as Humanitarian Pandemic Preparedness (H2P).

The H2P programme (2007-2010) was coordinated by the IFRC and aimed at equipping communities with a fully prepared, 'off-the-shelf' response to an influenza pandemic. This programme envisaged to equip front-line people in the community with the tools necessary to provide the most rapid, coordinated and effective response possible, designed to limit mortality, safeguard livelihoods and maintain cohesion in society – in those countries most vulnerable to a pandemic influenza outbreak. The principal objectives were: to support the development of influenza pandemic preparedness plans and protocols for communities in the areas of health, food security and livelihoods in designated countries; to strengthen the in-country capacities of staff and volunteers of humanitarian and civil society organizations to carry out influenza pandemic preparedness plans and protocols; to ensure coordination between global, national and district and community level stakeholders, in the preparedness and response of the humanitarian sector.

The IFRC collaborates with numerous other partners that include international organizations and agencies such as the CORE Group, AI.COMM, and InterAction, as well as the World Health Organization (WHO) and other UN agencies.

Website: http://www.ifrc.org/en/

International Alliance of Patients' Organisations (IAPO)

The International Alliance of Patients' Organisations (IAPO) is a global alliance representing patients of all nationalities across all disease areas and promoting patient-centred healthcare around the world. IAPO's mission is to help build patient-centred healthcare worldwide by realizing active partnerships with patients' organizations, maximizing their impact through capacity building; advocating internationally with a strong patients' voice on relevant aspects of healthcare policy, with the aim of influencing international, regional and national health agendas and policies; building cross-sector alliances and working collaboratively with like-minded medical and health professionals, policy makers, academics, researchers and industry representatives.

The IAPO points out to the fact that public health issues are now global, while the health industry is increasingly multinational, including pharmaceutical and medical device manufacturers, and more recently, managed care. In addition, regulations and health care policies are debated internationally, while progress in science, medicine and technology are also international, all of which affect national policies. According to the IAPO, other important stakeholders in healthcare are organized and influential internationally, from governments through to the medical professions. For these reasons, the IAPO believes that a global movement of patients' organizations, harnessed with shared knowledge, skills and expertise worldwide, will ensure effective impact at international, regional and national levels.

Website: http://www.patientsorganizations.org/

3.4.3 Non-European National Authorities

CDC – Centers for Disease Control and Prevention

The Centers for Disease Control and Prevention (CDC) is a major operating component of the US Department of Health and Human Services, and critical stakeholder in outbreak communication, providing leadership and technical expertise to public health and healthcare communities in conducting the fundamental public health functions that protect populations and individuals from infectious diseases, in responding rapidly to outbreaks and unusual health events, and in improving the understanding of infectious diseases. The Office of Infectious Diseases forms a component of CDC, which in turn comprises three National Centres: a) National Center for Emerging and Zoonotic Infectious Diseases, b) National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention, c) National Center for Immunization and Respiratory Diseases.

With reference to the mission of the National Center for Immunization and Respiratory Diseases (NCIRD), the focus is on prevention of disease, disability and death through immunization and by control of respiratory and related diseases. The CDC Influenza Division collaborates closely with state and local health departments in the US, as well as the World Health Organization (WHO), same as its European counterpart, the European Centre for Disease Prevention and Control (ECDC). During the last years, more initiatives and coordinated efforts are made for close collaboration on various levels, between CDC and ECDC, as well as other European and US Agencies, especially after the EU-US Summit Declaration which was agreed on 3 November 2009, where a transatlantic task force was established on urgent anti-microbial resistance issues[23], producing a comprehensive report with recommendations for future collaboration between the US and the EU in the global fight against antimicrobial resistance (Transatlantic Taskforce on Antimicrobial Resistance, 2011).

Website: http://www.cdc.gov

3.4.4 European Associations (Healthcare Professionals and Patients)

EPHA – European Public Health Alliance

The European Public Health Alliance (EPHA) is the European Platform bringing together public health organisations representing health professionals, patients groups, health promotion and disease specific NGOs, academic groupings and other health associations. The mission of EPHA is to bring together the public health community to provide thought leadership and facilitate change, to build public health capacity to deliver equitable solutions to European public health challenges, and to improve health and reduce health inequalities. Within the 2011-2014 EPHA strategic aims is to tackle health threats from communicable diseases, emphasising the need for better coherence in the policies and practices and adequate approaches for pandemic preparedness, including communication. In the context of development of public-health related policies, the need for better addressing human rights and discrimination issues also forms part of the EPHA agenda.

Website: http://www.epha.org/

[23] Transatlantic Taskforce on Antimicrobial Resistance (TATFAR)
http://ecdc.europa.eu/en/activities/diseaseprogrammes/TATFAR/Pages/index.aspx

EUPHA – European Public Health Association

The European Public Health Association (EUPHA) is an umbrella organisation for public health associations and institutes in Europe. In particular, EUPHA is an international, multidisciplinary, scientific organisation, bringing together around 12.000 public health experts for professional exchange and collaboration throughout Europe, encouraging a multidisciplinary approach to public health. Operational Sections of EUPHA include Ethics in Public Health, Infectious Disease Control, Migrant and Ethnic Minority Health, Public Health Epidemiology. The Infectious Disease Control (IDC) Section of EUPHA organises meetings and workshops on an annual basis, having as central theme infectious diseases and issues related to pandemics, attended by representatives of international agencies and institutions, such as WHO and ECDC.

Website: http://www.eupha.org/

CPME – Standing Committee of European Doctors

The Standing Committee of European Doctors (CPME) aims to promote the highest standards of medical training and medical practice in order to achieve the highest quality of health care for all patients in Europe. CPME is also concerned with the promotion of public health, the relationship between patients and doctors and the free movement of doctors within the European Union. CPME represents the National Medical Associations of 27 countries in Europe and works closely with the National Medical Associations of countries that have applied for EU membership as well as specialized European medical associations. To achieve its goals, CPME co-operates proactively with the Institutions of the European Union. Policies are being set both in answer to developments in Europe as well as by taking the lead in matters regarding the profession and patient care.

Website: http://www.cpme.eu/

PGEU – The Pharmaceutical Group of the European Union

The Pharmaceutical Group of the European Union (PGEU) is the European association representing more than 400,000 community pharmacists. The PGEU members are the national associations and representative bodies of community pharmacists in 31 European countries including applicant and European Economic Area members. PGEU mission is to promote the role of the pharmacist as a key actor in public health. Moreover, PGEU aims to promote and develop cooperation in Community Pharmacy among the European nations, to advocate for the contribution community pharmacists make to health systems and to public health through the provision of health services and the promotion of the rational and appropriate use of medicines, and to ensure that the vision of Community Pharmacy is reflected in EU policy and legislative developments. PGEU maintains regular contacts with the European Commission (including DG SANCO, DG ENTR, and DG CONNECT), the European Parliament, and the European Medicines Agency (EMA).

Website: http://www.pgeu.eu/

UEMO – European Union of General Practitioners

The European Union of General Practitioners (UEMO) is an organisation of the most representative national, nongovernmental, independent organisations representing general practitioners in the countries of Europe. UEMO encompasses organisations from all the current Member States of the European Union as well as from the countries of the European Free Trade Association and other

European countries. The principle objectives of UEMO are to study and promote the highest standard of training, practice and patient care within the field of general practice throughout Europe; to defend the role of general practitioners in the healthcare systems; to promote the ethical, scientific, professional, social and economic interests of European general practitioners, and to secure their freedom of practice in the interest of their patients; to determine the united views of the members and to represent them through the appropriate channels to the relevant European authorities and international organisations; o work with other European medical groupings, such as the Standing Committee of European Doctors (CPME), to strengthen the position and unanimity of the medical profession in Europe in order to maintain the highest possible standards of education, ethics and patient care. Among the organisations with which UEMO co-operates are the European Union of Medical Specialists (UEMS), the Permanent Working Group of European junior Doctors (PWG), the European Society of General Practice/Family Medicine, and the World Health Organization (WHO).

Website: http://www.uemo.eu/

EFN – European Federation of Nurses Associations

The European Federation of Nurses Associations (EFN), has been established with the aim to represent the nursing profession and its interests to the European Institutions, based on the nursing education and free movement Directives being drafted by the European Commission, while is the independent voice of the nursing profession, representing more than one million nurses at European Level. The EFN members are drawn from the National Nurses Associations from the twenty-seven EU Member States, which are in membership with the International Council of Nurses (ICN) and the Council of Europe. The International Council of Nurses (ICN), the World Health Organization (WHO) and the European Nursing Students Association (ENSA) are holding observer status within the EFN General Assemblies.

Website: http://www.efnweb.org/

FVE – Federation of Veterinarians of Europe

The Federation of Veterinarians of Europe (FVE) is a non-profit umbrella organisation of veterinary organisations from 38 European countries, representing around 200,000 European veterinarians. The FVE provides a platform for veterinarians across Europe to interact, to discuss and to develop position papers and professional guidelines. The FVE considers that the main task of the veterinarian is to “care for animal health and welfare and veterinary public health”. In order to create those appropriate conditions for veterinarians, the FVE formulated a number of priority subjects, with efforts focussing on animal health, public health and medicines, among others.

Website: http://www.fve.org/

ASPHER – Associations of Schools of Public Health in the EU Region

The Association of Schools of Public Health in the European Region (ASPHER) is the key independent European organisation dedicated to strengthening the role of public health by improving education and training of public health professionals for both practice and research. It represents the scientific and academic components of the public health workforce education and advanced training. ASPHER overall mission is to promote education, research and service in public health, in order to foster a

creative and dynamic academic and practical educational infrastructure for public health workforce development.

Website: http://www.2011.aspher.org/

HOPE – European Hospital and Healthcare Federation

The European Hospital and Healthcare Federation (HOPE) is a non-governmental European association, which seeks to promote improvements in the health of citizens throughout the countries of the European Union, and a uniformly high standard of hospital care throughout the European Union and to foster efficiency, effectiveness and humanity in the organisation and operation of hospital services and of the health systems within which they function.

Website: http://www.hope.be/

3.4.5 European Associations (Industry)

EFPIA – European Federation of Pharmaceutical Industries and Associations

The European Federation of Pharmaceutical Industries and Associations (EFPIA) represents the pharmaceutical industry operating in Europe. Through its direct membership of 32 national associations and 35 leading pharmaceutical companies, EFPIA is the voice on the EU scene of 1,900 companies committed to researching, developing and bringing to patients new medicines. EFPIA supports a vision of modern and sustainable healthcare systems in Europe, where patients have equal and early access to the best and safest medicines, which supports innovation, empowers citizens to make informed decisions about their health and ensures the highest security of the medicines supply chain. EFPIA includes research-based pharmaceutical companies, developing and manufacturing medicines in Europe for human use – called corporate members; and those organisations representing pharmaceutical manufacturers at national level whose members include, among others, research-based companies – called member associations.

Website: http://www.efpia.eu/

GIRP – European Association of Pharmaceutical Full-Line Wholesalers

The European Association of Pharmaceutical Full-Line Wholesaler (GIRP) is the umbrella organisation of pharmaceutical full-line wholesalers in Europe. It represents the national associations of over 600 pharmaceutical full-line wholesalers serving 31 European countries, including major pan-European pharmaceutical full-line wholesaling companies. GIRP members are the trustes supply chain partners of manufacturers, pharmacists, healthcare professionals and patients. In the past, GIRP has notified the European Commission about potential conflicts that might arise and problematic issues in the pharmaceutical supply chain, as a result of the market rules.

Website: http://girp.eu/cms/

IFAH – International Federation for Animal Health Europe

IFAH-Europe (International Federation for Animal Health Europe) is the federation representing manufacturers of veterinary medicines, vaccines and other animal health products in Europe. It represents both corporate members and national animal health associations in Europe. These

associations comprise both local medium-size enterprises (SMEs) and international companies. IFAH-Europe's membership covers 90% of the European market for veterinary products. FAH-Europe's mission is to promote a predictable, harmonised, science-based and innovative market place for the provision of quality animal medicines, vaccines and other animal health products, and so contribute to a healthy and safe food supply, and to a high standard of health and welfare for animals and people.

Website: http://www.ifaheurope.org/

EuropaBio – European Association for Bioindustries
The European Association of Bioindustries (EuropaBio) aims to promote an innovative and dynamic biotechnology-based industry in Europe. Members of EuropaBio are involved in research, development, testing, manufacturing and commercialisation of biotechnology products and processes. Corporate members of EuropaBio have a wide range of activities, which include human and animal health care, diagnostics, bio-informatics and more.

Website: http://www.europabio.org/

AVC – Association of Veterinary Consultants
The Association of Veterinary Consultants (AVC), is an association of completely independent, self employed veterinary specialists, aims at pushing veterinary support and science in the animal health and food sector by supporting global harmonisation of standards for animal health and animal derived products, assuring animal, user and environmental safety and other ethical principles as defined in the AVC – Code of Practice. The AVC is in open contact with organisations, agencies and institutions such the World Organisation for Animal Health (OIE), the European Medicines Agency (EMA) and the Directore-General for Health and Consumers (DG SANCO).

Website: http://www.avc.at/default.asp

3.4.6 EU Member States - National Competent Authorities

According to the Business Dictionary[24], a 'competent authority' is understood as any person or organisation that has the legally delegated or invested authority, capacity, or power to perform a designated function.

In the case of communicable disease outbreaks, communication and immunisation, three main competent authorities are involved:

1. The **National Ministry of Health** and Departments/Divisions within.
2. The **National Surveillance Institute for Public Health**
3. The **National Medicines Regulatory Agency**

These national authorities have the legitimacy and responsibility for implementing strategies in outbreak communication and immunisation for the general public. National authorities vary across

[24] The Business Dictionary, < http://www.businessdictionary.com/definition/competent-authority.html>, viewed 22 May 2012.

the different EU Member States, in their name and structure, therefore officials' names and contact details from national agencies and institutions are provided in the 'Stakeholder Directory' (ANNEX I).

3.4.7 EU Member States – Regional/Local Authorities

As we move down the pyramid, from international, to national, to regional and local public health authorities, there is a broader range of institutions, establishments and stakeholders that become relevant to outbreak communication, since there is direct involvement and communication between these types of stakeholders and the general public. The significant role of health professionals (i.e. doctors, pharmacists etc.) in public health communications has been highlighted in many cases, in the aftermath of the H1N1 (2009) pandemic[25,26]. In particular, in a pan-European survey (European Commission, 2010), results showed that general public (citizens aged 15 years and over) considered health professionals to be the most trusted sources of information about the H1N1 (2009) pandemic, while national health authorities and European authorities ranked as second and third trusted sources, respectively. Always in the same survey, also interesting was that health professionals were more trusted as source of information by respondents who were still in education. The importance of health care professionals is also highlighted in another European Commission report, assessing the EU-wide pandemic vaccine strategies (European Commission, 2009). In particular, EU Member States recognised the need to engage more effectively with health care workers, while it was also reported that in many occasions health workers had been the only point of reference for citizens, answering queries about the disease and the effect of vaccines.

Another characteristic of regional and local authorities is the fact that are mostly concerned with the implementation of the vaccine strategy decided by the national competent authorities. Thus, most of the regional and local stakeholders are concerned with the immunisation process. Below, various stakeholders have been identified relevant to outbreak communication, who could also directly affect individuals' behaviours (negatively or positively) in compliance with immunisation:

- **Prefectures / Municipalities – Public Health Division**
- **Hospitals / Clinics – Health workers/professionals**
- **Local / Regional Health Services – Day care centres**
- **Primary schools – Teachers/Educators**
- **General Practitioners (GPs)**
- **Non-Governmental Organisations (NGO's)**
- **Ethnic / Minority / Religious groups**
- **Local political parties / Influential individuals / Opinion leaders**

All these groups of stakeholders have a definitive, but less apparent, role in outbreak communication when it comes down to the implementation of strategies for public health. As it was explained in the 'Hazard Versus Outrage' model (Sandman, 2012), it is critical that national competent authorities and decision-makers are in a position to clearly perceive and realise the discontent or outrage certain

[25] Belgian Presidency of the Council of the European Union in Brussels, Conference on lessons learned from the A(H1N1) pandemic, 1 and 2 July 2010, < http://www.eutrio.be/pressrelease/conference-lessons-learned-influenza-pandemic-ah1n12009>, viewed 12 June 2012.
[26] Flash Eurobarometer 287 – The Gallup Organisation, Eurobarometer on Influenza H1N1, Flash EB Series no. 287, Hungary, 2010, < http://ec.europa.eu/public_opinion/flash/fl_287_en.pdf>, viewed 8 May 2012.

public health policies or actions can bring for specific groups in the community. Such negative perceptions and attitudes can be difficult to reverse, while public opposition and scepticism toward a health intervention grows out of proportion.

While there is a common front and shared rationale for all stakeholders, from international organisations to local communities, which is to prevent the spread of a disease or avoid getting infected by the virus, there are key qualitative differences between these stakeholders with regard to how they operate on the administrative, organisational, communication and social level, having different moral codes and following different procedures. Thus, on a level of European agencies and associations, as well as international organisations, there is a relatively clear hierarchical structure, the prioritisation of actions is based on specific standards and regulations, and network of collaboration between agencies and organisations facilitates the process of collecting information and exchange of knowledge for proceeding with the most appropriate intervention. As a result, the communication messages produced by such institutions during the outbreak of an infectious disease have some universality and straightforwardness in their content, expressed in a unified voice.

Moving on to the level of local communities or smaller regions within a country, the groups of stakeholders that classify above as regional or local authorities are in possession of two main qualities: a) the power of opinion (as everyone, whether this is scientific/professional or not) and b) the power of influence. In those cases where there are conflicting interests and ideologies, expressed individually or collectively by those stakeholders, as an outcome also conflicting messages are produced for people. Healthcare professionals, educators, political or religious leaders and representatives of local minorities usually feel stronger commitment toward the community they are also part of, thus might oppose governmental and public health authorities if they believe that in this way they protect the interests of the local community. Another element that is directly relevant to these groups of stakeholders is that of accountability. Certain groups of stakeholders might oppose a public policy not on scientific, but ideological grounds, without being held responsible for their actions and messages they choose to put forward for the public.

So, the risk can be underestimated not only by the general public itself, but influential leaders and professionals too, consciously or involuntarily. The common experience and collective memory of certain populations might also play its role in this. For instance, strategic public health interventions decided by the government might be perceived as exaggerated by religious leaders and healthcare professionals alike, if there had been an experience of a ‘false alarm’ in the recent past. These type of events and behaviours mould the general public behaviour in future events. Therefore is important to consider the level of responsibility that each group of stakeholders has in communicating messages to the general public, under which circumstances these messages are communicated, and what are those conditions that a particular stakeholder fulfils for influencing the most final decisions made by the people.

3.4.8 Industry - Vaccine Supply Chain

The ‘Industry’ as category, represents groups of stakeholders involved in the chain process for immunization, before the vaccines reach healthcare professionals for administration to the general public. Thus, this category includes vaccine manufacturers, wholesalers, depots and local distributors. The national and local competent authorities have a direct involvement in the process,

as vaccines are purchased and distributed in accordance with the national policies and regulations, while government officials have direct responsibility to ensure that general public can have access to vaccines in cases of an emergency event, such as a communicable disease outbreak. In the cases where national competent authorities are unable to control and economically or politically support this supply chain of vaccines, then international organisations (e.g. IFRC, UNICEF etc) usually take action to support. It should be pointed out that as regards sources of influence for the general public, in making final decisions regarding vaccine strategies, the pharmaceutical industry was considered to be the least influential source (European Union, 2009).

Below, the stakeholders involved in the vaccine supply chain are presented, classified into three main groups: Associations, Providers and Purchasers. The latter group (Purchasers) is included as directly linked to the industry and/or market sector.

ASSOCIATIONS

EVM – European Vaccine Manufacturers

The European Vaccine Manufacturers (EVM) is a specialised group within EFPIA. Established with the goal of supporting improved public health through immunisation at all stages of life, EVM represents the vaccine research and manufacturing industry operating in Europe. The EVM members are committed to investing in R&D of innovative vaccines for both developed and developing countries.

Website: http://www.evm-vaccines.org/

SAFE BioPharma Association

The SAFE-BioPharma is a non-profit association that manages the SAFE-BioPharma digital identity and digital signature standard for the global pharmaceutical, biotech and healthcare industries. The industry standard is used to establish and manage digital identities and to issue and apply digital signatures. This standard was developed by a consortium of biopharmaceutical and related companies with participation from US Food and Drug Administration (FDA) and European Medicines Agency (EMA). The standard mitigates legal, regulatory and business risk associated with business-to-business and business-to-regulator electronic transactions. It also facilitates interoperability by providing a secure, enforceable, and regulatory-compliant way to verify identities of parties involved in electronic transactions.

Website: http://www.safe-biopharma.org/

EUCOPE – European Confederation of Pharmaceutical Entrepreneurs

The European Confederation of Pharmaceutical Entrepreneurs (EUCOPE) was founded in autumn 2008 to promote companies and associations active in research, development, production and distribution of pharmaceutical products and enhance their scientific, technical, economic and legal objectives. EUCOPE represents member companies and associations operating in Europe with respect to international governmental organizations in particular towards the EU institutions and EU agencies.

Website: http://www.eucope.org/en/

MANUFACTURERS/SUPPLIERS

- **Vaccine Manufacturers**[27]
  - Abbott Laboratories
  - AstraZeneca *
  - Baxter **
  - Bristol-Myers Squibb
  - Cantacuzino ** (National level)
  - CSL ** (National level)
  - GlaxoSmithKline **
  - Johnson & Johnson
  - Merck
  - Medimmune-Avirion *
  - Novartis **
  - Omninvest ** (National level)
  - Pfizer
  - Roche
  - Sanofi Pasteur ** (National level)
  - Sinovak *
  - Solvay*
  - Teva

- **Vaccine Wholesalers in Europe**
- **Vaccine Suppliers in Europe**
- **Vaccine Exporters to/from Europe**
- **Vaccine Storage Depots in Europe**

PURCHASERS

- **National and regional public health authorities**
- **Other competent authorities (e.g. Ministry of Defence)**
- **Health care centres / Hospitals / Clinics**
- **Local and chain pharmacies**
- **Other healthcare professionals**

3.4.9 Media and Internet

This is perhaps the most multi-faceted group among the groups of stakeholders, as mass and social media, as well as the internet, have presence and significantly impact all phases of outbreak communication. For instance, the European Commission assessment report on the EU-wide response

[27] With one asterisk (*) those manufacturers who produced or were involved in the production of vaccines in response to the H1N1 (2009) pandemic. With two asterisks (**) those pandemic vaccines authorised by EMA for use. Note that some of the listed manufacturers operate on a national level. The list is not exhaustive.

to the H1N1 (2009) pandemic (European Commission, 2009) revealed that most EU Member States made use of the internet (e.g. emails, websites, e-newsletters) and/or new social media (e.g. text messages) in conveying changes in recommendations on product use to health care professionals. At the same time, European citizens considered media and the internet to be the least trusted source of information about the pandemic influenza (European Commission, 2010). The groups who showed to trust more the media were older people, rural inhabitants, manual workers and people with average or low levels of education. Younger people and those with advanced education were more likely to use the internet, as main source of information about the influenza pandemic. Finally, some cultural patterns emerged from this survey, with citizens of the southern European countries felt that media paid too much attention to the issue of H1N1 influenza, whereas citizens of the northern European countries felt that media paid enough attention; countries in the European periphery (e.g. Malta, Ireland, Latvia, Lithuania and Estonia) reported that media did not focus enough on the topic (European Commission, 2010). In the review of ECDC's response to the influenza pandemic, is pointed out a negative aspect of the mass media, since the Centre experienced heavy pressure from them during the acute phase of the pandemic.

Undoubtedly, the media and the internet are principal channels of communication, from international scale to local. The use of internet allows citizens to get information from official and reliable sources, without intermediaries or other filters. The internet as well as the new social media are powerful tools, that can affect perceptions and shape public behaviour quite easily, especially in situations of a pandemic, where emotional responses dominate logic. The mass media are also in this direction, however their impact on shaping public opinion has scaled down in the presence of internet and social media.

Another category of stakeholders that merits attention in outbreak communication, and thus categorised as separate group, is that of 'science journalists', which is also represented by EUSJA (European Union of Science Journalists' Associations). The principal aim for science journalism is to convey reporting about science to the public, through interactions between scientists, journalists and the general public.

In sum, as key stakeholder groups in the section of media and internet are considered the following:

- **Mass Media**
  - Broadcast media (i.e. television, radio, film industry)
  - Print media (i.e. newspapers, magazines, books, brochures)
- **Social Media**
  - Web-based technologies
  - Mobile-based technologies
- **Science Journalism**
- **Internet**

3.4.10 Other groups

This section includes other organised groups of stakeholders, which are also involved in outbreak communication, and can significantly influence final decisions about immunisation. Such groups

include people who might be sceptical about the outbreak itself or strongly oppose vaccination as a life choice, as something harmful or unnecessary. Therefore, as stakeholders operating on a European level, are considered the following:

- **European Forum on Vaccine Vigilance**
- **ANH Europe – Alliance for Natural Health**
- **The Informed Parent**

These groups of stakeholders might not have a dominant role in outbreak communication, but undeniably they are in position to make the general public to adopt a defensive position towards immunisation strategies, especially vulnerable groups such as pregnant women and children (or rather, the parents) who need to make ultimately an enforced decision for another human being.

3.5 The Outbreak Communication System

It has been already highlighted the complexity of this field of disease outbreak communication, from the stakeholders point of view, and the identification of stakeholder exercise has demonstrated the multiple stakeholders involved. Within an organisation frame or environment, the identification and mapping of stakeholders is a task where boundaries of general impact and involvement are quite clear. As suggested by Kettl (2002), in a world where power is shared, no organisation is fully in charge, thus no organisation 'contains' the problem, in the cases where the problem is of public concern. In the case of a pandemic disease outbreak communication, the outcome of a stakeholder analysis resembles more a system which is made up of various components. These components have an autonomous status but need to link with other components (stakeholders) in order to effective manage a global-scale infectious disease outbreak. All stakeholders have some partial responsibility in a global problem, whether this relates to the natural environment, the economic development or the outbreak of a disease (Bryson and Crosby, 1992). Considering all the characteristics of the different groups of stakeholders outlined in the previous section, and strictly on a basis of interdependencies and collaborations formed between those stakeholders during the H1N1 (2009) pandemic, the Outbreak Communication System was formed (Fig. 2), where the network of stakeholder groups is schematically represented, showing connections between stakeholder groups, from international to regional/local level.

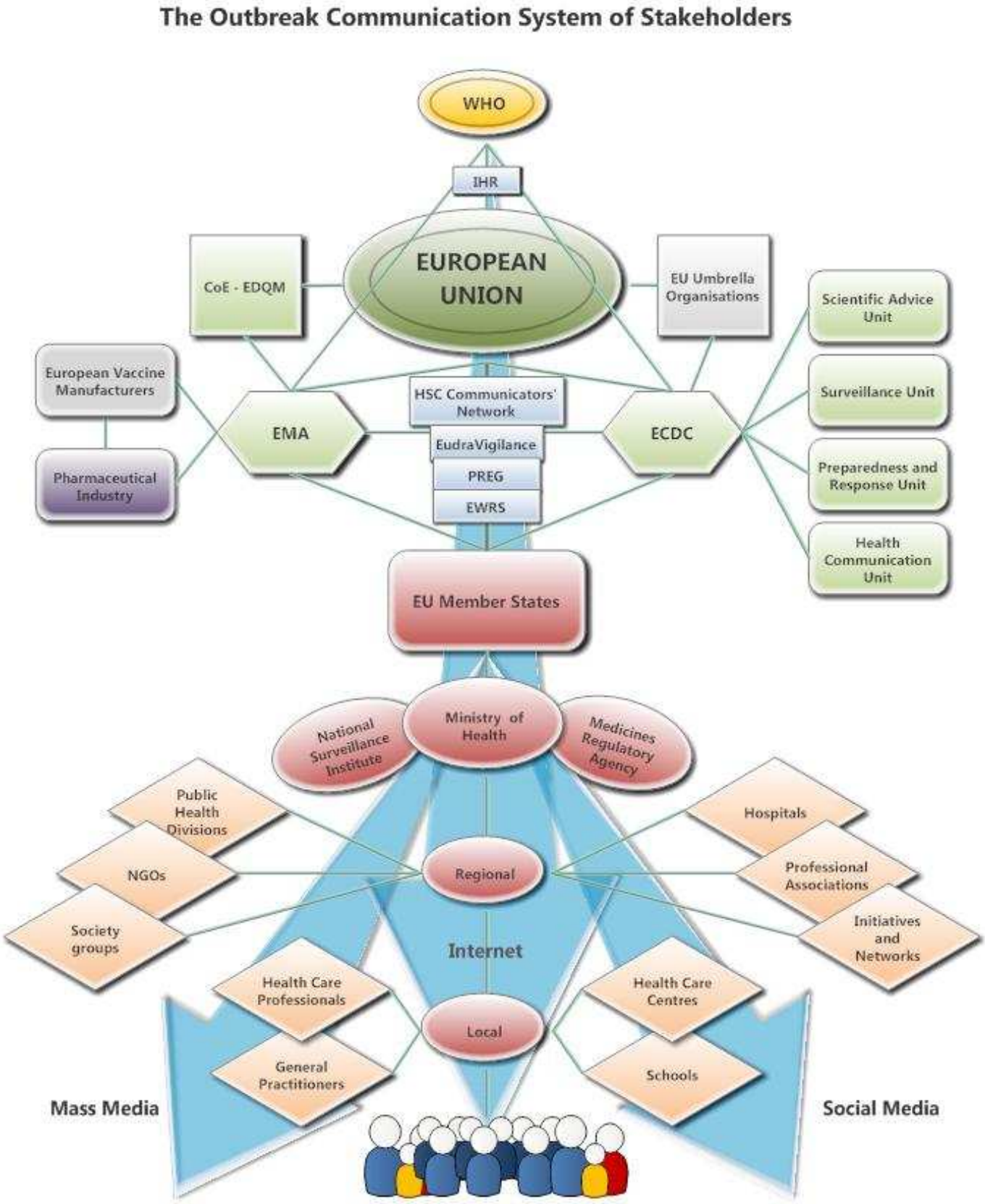

Fig. 2: Stakeholders interconnections in outbreak communication and relevance with the public.

3.6. The vaccine supply chain

As part of the stakeholder identification exercise, it would also be useful to take a closer look at the vaccine supply chain. The H1N1 (2009) pandemic outbreak opened up top-level discussions on the operational procedures followed with regard to the vaccine supply chain, as well as other issues of technical nature that need to be effectively addressed future pandemics. For instance, in the context of the 'Optimize Project: Immunizations Systems and Technologies for Tomorrow', which is a collaborative project between the World Health Organization (WHO) and PATH (an international non-profit organisation), the aim is to create a flexible and robust supply chain for vaccines by taking into consideration parameters such as the higher costs and size of new vaccines , as well as the greater consequences in the case of supply failure. Other international organisations, such as UNICEF, also put emphasis on the need for speeding up the supply processes for vaccine distribution. Scientific studies also point to the direction that vaccine supply chains need to be better funded and strengthened (Kaufmann, Miller & Cheyne, 2011).

A recent study by Russo (2012) provides a set of recommendations about pandemic vaccine distribution in the within the framework of the United States policies and regulation, and further underlines that three distinct (but interdependent) processes should define the pandemic response using vaccination as mitigation strategy: production, distribution, administration. These three processes were also manifested in the groups of stakeholders identified in the previous section. In this same paper, Russo also develops a hybrid model of Public Private Partnership for vaccine distribution during pandemic outbreaks, which is presented below:

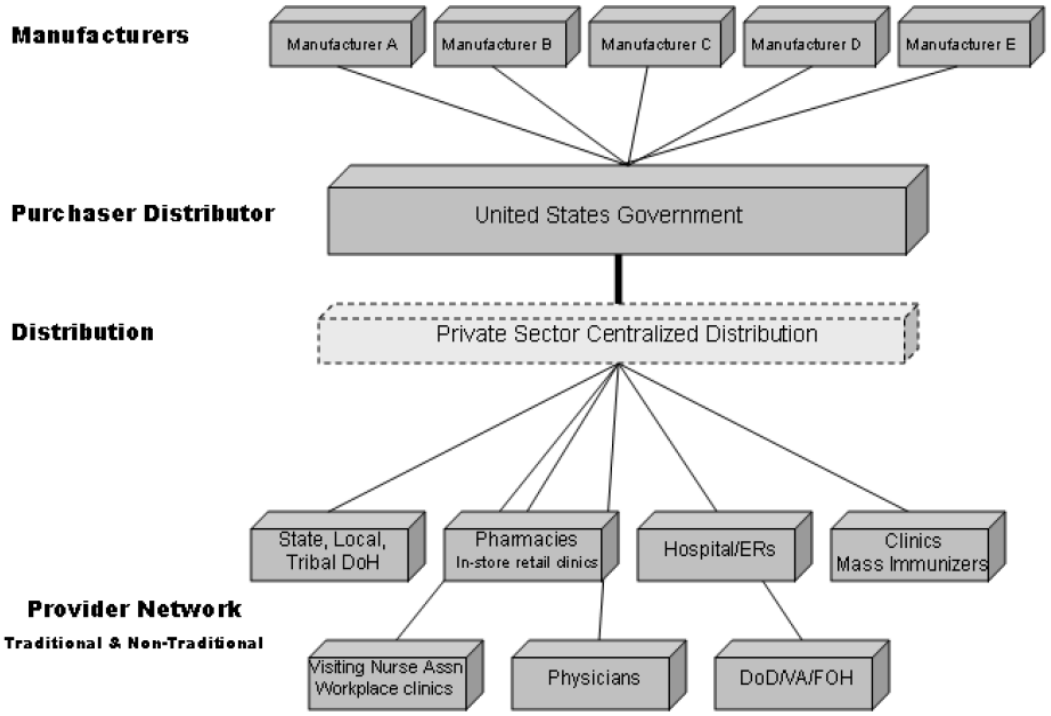

Fig. 3: Public Private Partnership Model for pandemic vaccine distribution. Taken from "Pandemic Vaccine Distribution Policy for the Twenty-First Century" by T. Russo, 2012, *Homeland Security Affairs,* 8, p. 9.

The Public Private Partnerships progressively becomes more established in various sectors as the demand for efficiency and better quality in services keeps growing. In the field of vaccines and antiviral drugs, the private sector (pharmaceutical industry) has been working closely with institutions and agencies of the European Union; for instance, the Council of the European Union opened the way to collective negotiation process that would involve the ECDC and HSC with the pharmaceutical industry, for the development and purchase of vaccines and anti-virals, taking into account the cost, storage, logistical and legal aspects in this area[28]. The Optimize Project mentioned earlier, also brings forward the issue of Public Private Partnership and the idea of outsourcing services, as a necessary pre-requisite for meeting the needs in an increasingly complex environment such as the supply of vaccines, where public authorities might not be able to respond in an appropriate and effective way, as a function of logistics or economic demands (PATH and WHO, 2011).

The result of outsourcing services in the vaccine supply chain, and perhaps even in pandemic outbreak communication itself, automatically implies that yet more stakeholders will need to be identified, also having considerable responsibility at the same time, both towards the general public and the national public health authorities. For the moment, and based on the existing evidence gathered from assessment reports and reviews, the field of logistics accumulates more power as stakeholder (creating another layer of interdependencies), as the management in vaccine distribution passes on to the private sector.

3.7 Stakeholder mapping in outbreak communication

After the identification, profiling and development of a relationship model – *Outbreak Communication System* – of stakeholders in communicable disease outbreak communication, as well as the identification of potential other stakeholders that might be relevant in future pandemics as part of the vaccine chain process, the next step of the 'stakeholder analysis' is to evaluate those stakeholders based on a series of qualitative characteristics that better defines their role in such events. This step is the 'stakeholder mapping', a practical tool that is used for clearly understanding the dynamics and position of stakeholders in the frame of an operational process, with the aim of successfully implementing a planned strategy that requires multiple layers of collaboration between diverse groups of stakeholders.

In response to an emergency or a catastrophic event, stakeholder mapping is directly relevant to the planning and prioritisation of actions taken by decision makers and various other professionals. In addition, a complex field such as public health, requires an interdisciplinary and cross-boundary approach to effectively address all issues. The salience of stakeholder mapping was evident in the case of the most recent pandemic outbreak of influenza A (H1N1), when various European Agencies and Institutions (e.g. ECDC, EMA, HSC etc.) collaborated closely with the World Health Organization (WHO), creating a series of strategies to restrain the pandemic, almost within a month after WHO declared phase 6 (European Commission, 2010). While a clear prioritisation of actions was achieved on this level where international organisations were involved, from availability of vaccines to immunisation of groups higher at risk, on a national level procedures were far more complicated, as

[28] Council of the European Union, Press release 9507/04: Council Meeting – Employment, Social Policy, Health and Consumer Affairs, Luxembourg, 1-2 June 2004, available at http://www.evm-vaccines.org/pdfs/eu_council_conclusion_ipd.pdf

more stakeholders took an active role at later stages, while conflict of interests between various key stakeholders might also have had an impact in the process. The different communication paths and interconnections between various stakeholders have already been demonstrated (Figure 2), however it is not quite clear the level of influence and actual involvement each group of stakeholders have in the process of outbreak communication.

The objective of stakeholder mapping in outbreak communication is to evaluate on a scale some key characteristics of the identified stakeholders, and present these in a transparent and objective manner, after considering carefully the level of involvement and impact of these stakeholders in communicating messages to the general public, but also in affecting the overall vaccine chain process and procedures followed by national competent authorities to achieve their targets. In doing this, the rationale behind the stakeholder mapping method to be used is presented in brief.

3.7.1 Methods for stakeholder mapping

As it has been highlighted already, stakeholders in outbreak communication are either assigned with different roles (legitimacy-accountability) or they assume their roles following own principles of approach. Such stakeholders can be considered both internal and external to the system, depending on the level of compatibility their actions have with the overall strategy that is followed during the outbreak. The methodological approach for mapping stakeholders in outbreak communication, will need to consider both internal and external stakeholders, as their involvement during a critical phase might be decisive for successful implementation of a response strategy.

The project task T2.1 - *Stakeholder Mapping* links directly to the task of determining the information needs of stakeholders in outbreak communication, as a variable of the type and format of information available and the information value to each group of stakeholders[29]. To achieve this, it is vital to identify the most appropriate method or technique for mapping stakeholders (presented on a matrix) and to prioritise the most important stakeholders as regards their interests and needs relevant to communication during pandemics. This last phase of stakeholder analysis forms the last piece in the puzzle for producing a comprehensive directory of stakeholders, comprising individuals, institutions and organisations.

A number of methods for stakeholder mapping have been developed in the last two decades, primarily in response to the needs of organisations towards establishing a participatory model, or large-scale projects for an efficient and co-operative management. The main characteristic of stakeholder maps are the key features or dimensions identified, which are used for evaluating the role of each stakeholder group, and the way this group is involved, affected or influenced within the frame of a deployed strategy. Some of the most commonly used features include: *power*, *influence*, *impact*, *interest*, *attitude*, *dynamism*, *importance* and *potential*.

As the stakeholder analysis is technique that is used widely in different fields and contexts, one would assume there is a wide spectrum of stakeholder mapping techniques to choose from. Indeed, different pairings and combinations of the abovementioned features have been attempted in the past, since the way stakeholder maps are constructed relates directly with the purpose of the analysis (Brugha and Varvasovszky, 2000). This means that stakeholder mapping is not a rigid

[29] TELL ME Project: T2.2 – Stakeholder communication requirements.

process; on the contrary, it allows considerable flexibility according to the object of investigation, which is placed on the centre of the map (outbreak communication during pandemics, in our case).

The mapping of stakeholders is visually represented on a matrix *or* a grid, which comprises either two or three variables, depending on the features that were used. For instance, the World Health Organization (WHO) adopts the 'Mendelow matrix' (Mendelow, 1991), where stakeholders are mapped across a two-feature 'Power-Interest' grid (High-Low power / High-Low interest), while the Imperial College of London (2007) by substituting 'power' with 'influence' developed the 'Influence-Interest' grid (High/Low influence / High-Low interest). Another form of stakeholder analysis has been suggested by Mayers (2005), who introduced the 'Power-Potential' grid. The Guide to the Project Management Body of Knowledge (Project Management Institute, 2008), lists another two grid-based classification models, made up of two features, namely the 'Power-Influence' grid and 'Influence-Impact' grid.

The use of the abovementioned two-dimensional models, comes with two main limitations, in relation to the objective of mapping stakeholders in outbreak communication. First, the complex dynamics in the case of a pandemic outbreak cannot be expressed solely as a function of two variables interacting with each other; this would require a certain level of predictability in advance, as regards stakeholders behaviour, as well as a clear organisational (even hierarchical) structure in the process of communication. The conflict of interest for stakeholders, which translates into the various sources communicating messages during the outbreak of a communicable disease, would require a more elaborate approach. Second, mapping of stakeholders on a two-axis grid requires to evaluate stakeholders on absolute terms, and this could be a limiting factor when trying to interpret qualitative aspects of each group of stakeholder, concerning their role within the 'outbreak communication system' (Fig. 3).

Further to those two-dimensional models for stakeholder mapping, a number of other models have been introduced in the past, adding another variable on the equation of stakeholder evaluation. A key characteristic of these three-dimensional models is that more combinations can be made, which gives another meaning in the categorisation of stakeholders. Examples of such three-dimensional mapping include the 'Power-Interest-Influence' grid developed by Brugha and Varvasovsky (2000) within the context of healthcare and policies, and the 'Power-Interest-Attitude' grid, developed by Murray-Webster and Simon (2005). From the above, it becomes evident that power and influence have a central role in most stakeholder mapping models, followed closely by impact and interest. It is also clear that stakeholder mapping takes various shapes to become appropriately adjusted and correspond better to the objectives set by a project or an organisation.

In the case of a pandemic outbreak, which is a multi-stakeholder platform at core, the model to be chosen for mapping the identified stakeholders needs to run vertically and through the multiple layers, providing clear coordinates for each group of stakeholders in relation to others, and determine which stakeholder groups are most important in the communication process, and thus need the most attention in terms of information needs for the duration of a pandemic outbreak. The method for stakeholder mapping that most closely corresponds to these aims, draws from the stakeholder theory developed by Mitchell, Agle & Wood (1997) which converges on a fundamental quality (salience) for the identification and categorisation of stakeholders, considering behavioural features, towards a more objective approach for understanding which stakeholders count or should

be regarded as prominent. This model for mapping stakeholder has been described as the 'salience model', which is based on the principle that stakeholders 'can affect or can be affected' by an organisation's strategy, while is also concerned with prioritisation, from the perspective of meeting stakeholders' needs in a more efficient way. Finally, this model is quite relevant to this task as it primarily assists for selecting the most appropriate communication approach for each stakeholder group separately, while it further illustrates the dynamic qualities of stakeholders, and how these stakeholders can shift from one group to another.

The 'salience model' comprises of three attributes – incorporating to a certain extent, a number of features mentioned earlier – that we shall adopt for the purpose of mapping stakeholders in outbreak communication. Those attributes that determine stakeholder salience are[30]:

- **Power** – A relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not have otherwise done.
- **Legitimacy** – A generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, definitions.
- **Urgency** – The degree to which stakeholder claims call for immediate attention.

The pairings made between the different attributes, produce 7 different types of stakeholders. The following Venn diagram provides a schematic representation of the 'salience model' and the various sub-categories of stakeholders based on the shared attributes (Fig. 4).

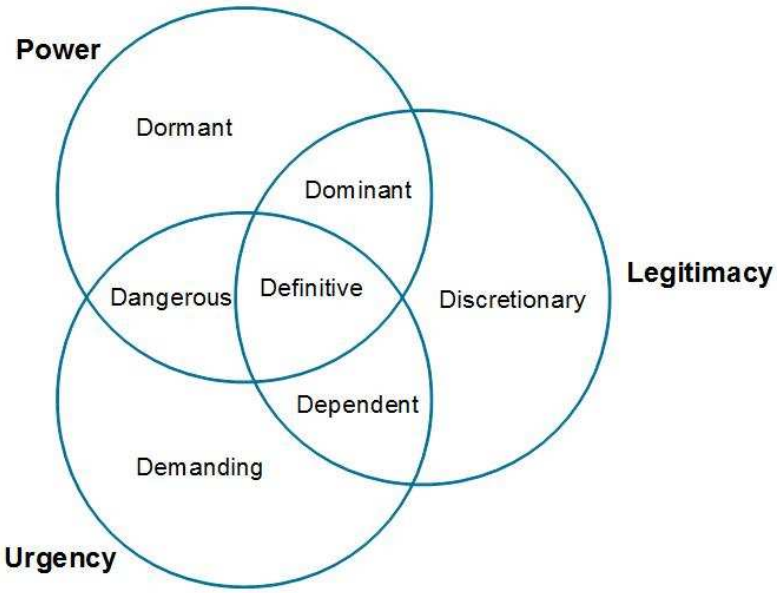

Fig. 4: Stakeholder salience. Taken from "Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts", by R K Mitchell, B R Agle & D J Wood, 1997, *The Academy of Management Review*, 22, p. 874.

[30] R K Mitchell, B R Agle & D J Wood, 'Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts', *The Academy of Management Review*, vol. 22, 2007, p. 869.

3.7.2 The Salience Model in outbreak communication

Similarly to most of the stakeholder mapping methods that exist, the categorisation and definitions provided in the 'salience model' developed by Mitchell, Agle & Wood (1997), is made primarily for application in a business and management environment, for meeting the needs of organisations and firms in relation to their stakeholders. However, in the case of a pandemic outbreak, the stakeholder 'salience' takes another meaning. In principal, this is relevant to mapping all those stakeholders or entities, who are (or expected to be) involved, who can affect or be affected, and generally have an impact in risk and crisis communication, as well as the chain process of immunisation, in relation to the behavioural response expressed by the general public.

Thus, the definitions of the three attributes (Power, Legitimacy, Urgency) need to be refined, in accordance with the nature and characteristics of stakeholders involved in the outbreak communication, so that is clear which groups of stakeholders require the most attention, based on their level of involvement and overall impact, in successfully responding in the case of a pandemic outbreak. A successful response is measured by the smoothness in the flow of information, as well as trustworthy and transparent messages at all levels; furthermore, it is measured by the swiftness and effectiveness in mobilising various stakeholders, within the frame of building a highly collaborative and trustful environment where the general public feels part of a mechanism, fully realising and assuming the responsibility that everyone has towards the wider community, thus taking all necessary measures to prevent the spread of an infectious disease.

It is important to highlight also the fact the dual identity of stakeholders in pandemic outbreaks – any person that is described as a stakeholder, assigned with a specific role in outbreak communication, whether on international or national level, also is threatened by the spread of a communicable disease, in which case this individual belongs to the general public. This means that any stakeholder having some power, legitimacy, or urgency in the communication process can affect*, but at the same time can also be affected*.

It has been stressed already the fact that there is considerable flexibility in choosing different features or attributes that will comprise the grid for mapping stakeholders. This depends on the aims of a project, the overall structure and specific needs of an organisation and so on. For the purpose of mapping stakeholders in outbreak communication, the three attributes of the 'salience model' remain, but we shall try and give our definitions that relate closely to outbreak communication.

Power
The ability of a stakeholder (or entity) to impose his opinion or will upon other stakeholders (or entities); any stakeholder with power, is able to mobilise resources and influence other groups of stakeholders or the general public, with those stakeholders perceived to be holding special knowledge, expertise or an 'absolute truth'.

Legitimacy
The perception or acceptance of a stakeholder (or entity) as someone whose involvement or actions in risk and crisis communication are desirable and proper within the societal constructed system of principles, norms, values and standards; a legitimate stakeholder (or entity) could be an elected representative or leader whose purpose is to protect the interests of the people or community this

stakeholder represents. A legitimate stakeholder has responsibility and accountability for actions/decisions taken, while involvement in outbreak communication adheres to some national or international regulatory framework. Generally speaking, if a stakeholder's norms and standards are (or perceived to be) legitimate, then it is more likely that people will show compliance with them.

Urgency

The readiness and decisiveness of a stakeholder (or entity) to get involved immediately in any stage of outbreak communication, either as part of the operating framework of the stakeholder (or entity) and/or due to responsibility a stakeholder (or entity) has towards a community (general public). The immediacy and request for continuous flow of information on how the disease outbreak unfolds, is key characteristic for stakeholders having this attribute. The urgency to communicate messages to the general public can have both negative and positive implications, depending the source, timing and content of the message.

Following the methodological steps presented in the theory of stakeholder identification and salience (Mitchell, Agle & Wood, 1997), these three attributes of power, legitimacy and urgency, produce in pairings seven different groups of stakeholders (Table 1). The typology of these groups has remained the same, as presented in Figure 4, however, for avoiding any ambiguities, definitions are provided for each of the seven different areas. Furthermore, those seven areas/groups of stakeholders are categorised in three groups (Latent, Expectant, Definitive) by level of salience (Low [Latent], Medium [Expectant], High [Definitive]).

Table 1: Types of stakeholders in outbreak communication categorised by level of salience.

Level of Salience	Type	Definition
Latent Stakeholders *"Stakeholder salience will be low where only one of the stakeholder attributes are present"*	**Dormant**	Dormant stakeholders possess power to influence or impose their will on certain other stakeholders or entities, or certain processes associated with an outbreak of a pandemic, but without having a legitimate relationship or urgency in their actions.
	Discretionary	Discretionary stakeholders possess the attribute of legitimacy in communicating messages in support of the community these stakeholders represent, but they have no power to influence a wider community of stakeholders (e.g. general public) or urgent demand to become involved.
	Demanding	Demanding stakeholders seek to actively engage in the outbreak communication process, receiving regular updates and information from the authorities, but have neither power nor legitimacy in the communication process.

Expectant Stakeholders *"Stakeholder salience will be moderate where two of the stakeholder attributes are present"*	**Dominant**	Dominant stakeholders possess power with legitimacy, and depending on their attitude and interest, these stakeholders can be catalysts for shaping behaviour across a great number of people.
	Dependent	Dependent stakeholders have urgent legitimate claims during a pandemic outbreak, but without being in a position to influence other stakeholders. These stakeholders rely on other stakeholders or entities for putting forward their claims.
	Dangerous[31]	Dangerous stakeholders possess urgency and power but not legitimacy, and thus may be coercive or dangerous with respect to the strategy chosen by the competent authorities to deal with a pandemic outbreak.
Definitive Stakeholders *"Stakeholder salience will be high where all three of the stakeholder attributes are present"*	**Definitive**	Definitive stakeholders possess power, legitimacy and urgency. These stakeholders develop strategic plans and take action for the common benefit, i.e. to protect the general public. The involvement of definitive stakeholders is crucial for the duration of a pandemic outbreak, with all other stakeholders (or entities) relying, to some extent or entirely, on the decisions and actions taken by these stakeholders.

The stakeholders and groups of stakeholders in outbreak communication, as these were identified and described in the previous section in relation to their role and involvement during the H1N1 (2009) pandemic, are mapped on a Venn diagram in accordance with the descriptions provided on Table 1. As a complementary exercise, the stakeholders identified in the context of outbreak communication, are listed on a table which specifies the typology for each stakeholder. A main characteristic of the salience model is that is allows to identify and depict the possibility for certain stakeholders to pass from one area to another, based on the needs and the given circumstances in the response and recovery phase of a crisis. Thus, a stakeholder which was perceived to be of low importance prior to an outbreak, could play a significant role in communication, influencing decisions either of European institutions and national authorities or directly the general public, and eventually this stakeholder might be considered to be of medium or even high importance. In the following table (Table 2), the categorisation of stakeholders was based on the aforementioned criteria, in light

[31] The term "Dangerous" might sound trivial in the context of outbreak communication. For this purpose, 'dangerous stakeholder' is understood as any type of stakeholder whose 'urgency' and 'power' might have an undesired impact (intentionally or unintentionally) in the overall communication strategy planned by the officials and authorities on a national/regional level.

of their importance (salience) and potential role in communication during an outbreak of a pandemic.

Table 2: Typology of stakeholders in outbreak communication

LEVEL	STAKEHOLDER	AREA
INTERNATIONAL	WHO	Definitive
	OIE	Dominant
	WTO	Dominant
	UNWTO	Dependent/Definitive
	UNICEF	Dependent/Definitive
	IOM	Dominant
	IFRC	Dependent/Definitive
	EDQM	Dominant
EUROPEAN Institutions & Agencies	ECDC	Definitive
	EMA	Definitive
	EC – DG SANCO	Definitive
	EC – DG RTD	Discretionary
	EC – DG ENTR	Discretionary
	EC – DG CONNECT	Discretionary
	EC - EAHC	Discretionary
EUROPEAN Associations (Healthcare)	EPHA / EUPHA / CPME / PGEU / UEMO / EFN / FVE / ASPHER / HOPE	Dominant
EUROPEAN Associations (Vaccine-Industry)	EFPIA / GIRP / IFAH / EuropaBio / AVC	Discretionary
NATIONAL	Ministry of Health	Definitive
	Surveillance Institute for Public Health	Definitive
	Medicines Regulatory Agency	Definitive
	Non-Governmental Organisations	Definitive/Dangerous/Dependent
REGIONAL / LOCAL	Prefectures / Municipalities	Dominant
	Hospitals / Clinics	Dependent/Demanding/Dangerous
	Local / Regional health services	Dangerous/Definitive
	Primary schools	Dangerous/Definitive
	General Practitioners	Dormant
	Ethnic / Minority / Religious groups	Dependent
	Local political parties	Demanding/Dependent
	Opinion leaders	Dormant
	Anti-vaccine groups	Dangerous
INDUSTRY	Vaccine manufacturers	Demanding
	Vaccine wholesalers	Demanding
	Vaccine exporters	Demanding
MEDIA	Mass media (Broadcast & Print)	Dangerous
	Social media	Dangerous
	Science journalists	Demanding

In sum, the stakeholders that classify as the most salient in outbreak communication (Definitive Stakeholders), whose involvement is crucial in the coordination of efforts for a successful communication strategy, towards better compliance and support of the immunisation programme by the general public. These stakeholders could classify as 'internal key stakeholders'.

- World Health Organization (WHO)
- European Commission – Directorate-General for Health & Consumers (DG SANCO)
- European Centre for Disease Prevention and Control (ECDC)
- European Medicines Agency (EMA)
- Ministry of Health and related Departments/Divisions
- National Surveillance Institute for Public Health
- National Medicines Regulatory Agency

There are yet more stakeholders who are particularly important in outbreak communication, either on a level of influencing policy formulation and decision-making processes, in collaboration with the above stakeholders (e.g. European Associations, Non-Governmental, International and Intergovernmental Organisations), *or* on a level of influencing and shaping public behaviour (positively/negatively) with regard to the proposed compliance measures for protection of public health (e.g. healthcare workers, media, and anti-vaccine groups). The Venn diagram (Fig. 5) presents how the different groups of stakeholders are distributed on the Power-Legitimacy-Urgency map.

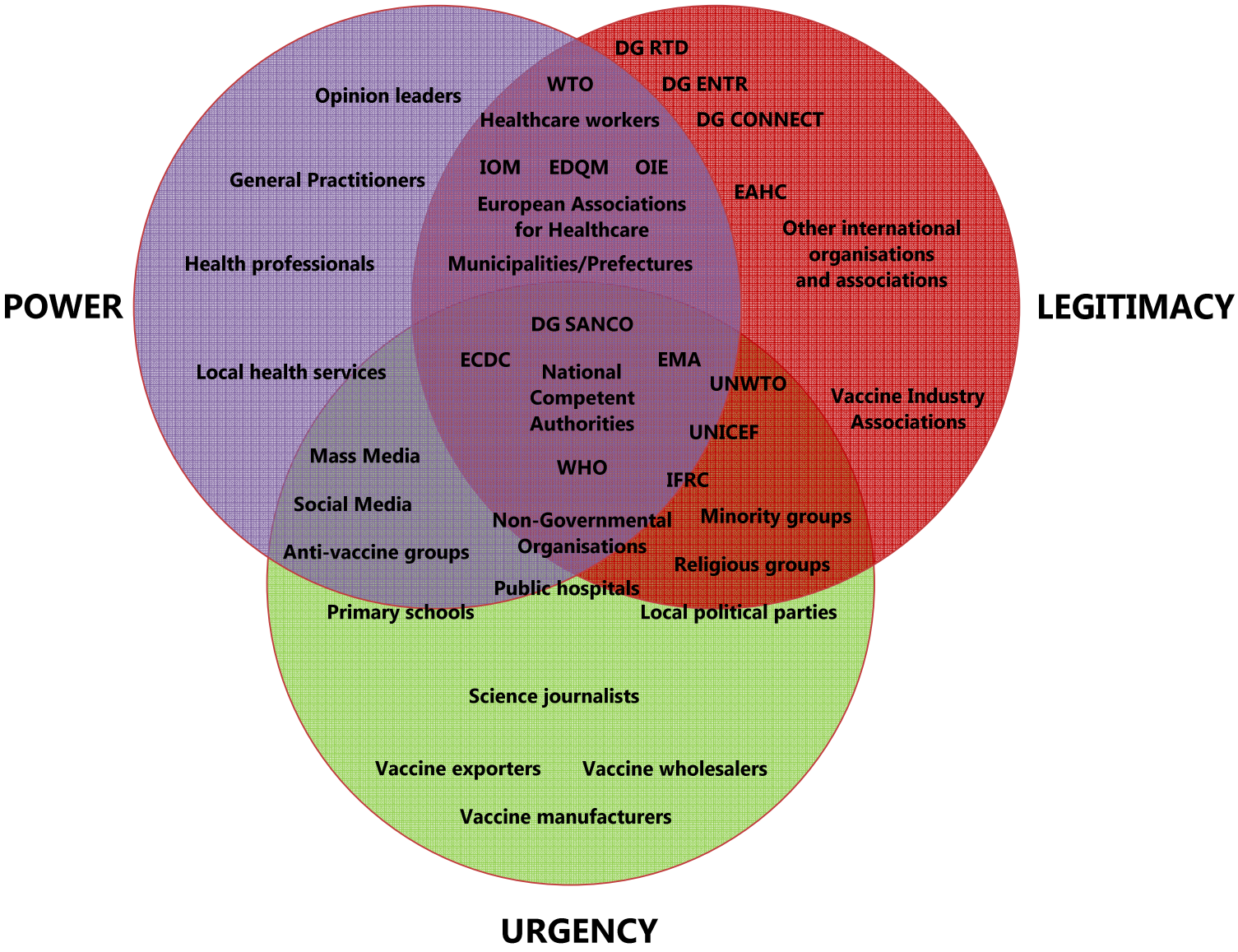

Fig. 5: Stakeholder mapping in outbreak communication in accordance with the 'Salience Model'

3.7.3 Stakeholder collaboration, immediacy to public and attitudes towards vaccination

The system of dynamics in outbreak communication goes further than issues of legitimacy and empowerment of certain groups of stakeholders, whether these are on a level of decision-making or the level of executing the vaccine programme. In the aftermath of the H1N1 (2009) pandemic, European Institutions and Agencies highlighted in their assessment reports the need for better structured and more effective collaboration with other entities and stakeholders on various levels. For instance, in the review of the European Centre for Disease Prevention and Control response to the influenza pandemic, it was suggested that healthcare professionals need particular attention as they are key in winning the trust of the populations (Greco, Stern & Marks, 2011), and this was

further supported by the European Medicines Agency, suggesting that healthcare professionals are identified as key to disseminating reliable information about vaccines and antivirals, and stressed the importance of having to work closely with this group for exploring particular needs and concerns these professionals have (EMA, 2011). The European Medicines Agency also stresses the need for greater involvement of other stakeholders in future pandemics, such as the European Directorate for the Quality of Medicines (EDQM).

The level of involvement and different types of collaboration and inter-dependencies that exist between stakeholders, have been highlighted in previous sections of this report, especially on the level of European and international authorities. On the national level, a number of other criteria and characteristics are also evident that need to be taken into account. Under particular circumstances, individuals or groups of stakeholders who were described as "Latent" or "Expectant" in the salience model (Fig. 5) could transform into "Definitive", in the context of communicating messages, influencing public perceptions and behaviour towards vaccination. For example, healthcare workers are negatively influenced and affected by lack of coordination with local authorities, which in turn has a negative and direct impact on the behaviour of the general public. In addition, the means of communication (i.e. internet, mass media, social media) and overall strategy designed by the Department of Health or other national competent authorities for communicating messages to the public, needs to be carefully planned with the support of various other entities responsible for the administration of vaccines, such as local health services, general practitioners and other professionals.

With those issues in mind, it would valuable to attempt another type of evaluation for stakeholders identified in outbreak communication, by considering some further qualitative criteria, which are relevant to stakeholders' immediacy (i.e. ability to reach and communicate directly to a considerably wide audience, with the audience being interested to this stakeholder), and the general attitude (or behaviour), which refers to the potential reaction of stakeholders to the decisions and measures taken by the competent authorities for restraining the spread of an infectious disease during a pandemic.

The 'Immediacy' is measured on a three-item scale (High (H) – Medium (M) – Low (L)). The 'Attitude' is also measured on a three-item scale (Supporting (S) – Neutral (N) – Opposing (O)). It should be noted that in the life-cycle of a pandemic outbreak, certain individuals or entities that form part of a wider class or group of stakeholders (e.g. a TV channel which classifies under the 'mass media', or a general practitioner who classifies under 'healthcare services') might choose to adopt different attitudes/behaviour, as a result of different interests they have. For this reason, some of the stakeholders are presented as supporting and/or neutral and/or opposing at the same time. Such stakeholders merit particular attention, as they can produce conflicting messages for the public, thus lowering the levels of compliance as regards vaccine strategies implemented. Obviously, the importance of these stakeholders in outbreak communication, on a national level, is in proportion to their degree of immediacy, for shaping perceptions and influencing behaviours of the general public.

This type of stakeholder analysis (Table 3), including the rankings of 'immediacy' and 'attitude' on a scale, are based on the descriptions of stakeholders earlier in this report, various reports produced by international organisations, institutions and agencies, and estimated level of involvement during the most recent pandemic (H1N1) outbreak. The overall purpose of this additional exercise is to

demonstrate the diversity of stakeholders, each having different needs, priorities and considerable impact in decisions made by competent authorities with regard to vaccine compliance.

Table 3: Level of immediacy and attitude of stakeholders in outbreak communication.

Stakeholder	Degree of immediacy to public[32]			Medium of communication to public	Attitude[33]		
	H	M	L		S	N	O
WHO		M		Internet / Social Media		S	
OIE		L		Internet		S/N	
WTO		L		Internet		S/N	
UNWTO		M		Internet / Social Media		S	
UNICEF		M		Internet / Social Media / Direct		S	
IOM		L		Internet		S	
IFRC		M		Internet / Social Media / Direct		S	
EDQM		L		Internet		S	
ECDC		M		Internet / Mass Media		S	
EMA		M		Internet		S	
EC – DG SANCO		M		Internet		S	
EC – DG RTD		L		Internet		N	
EC – DG ENTR		L		Internet		N	
EC – DG CONNECT		L		Internet		N	
EC - EAHC		L		Internet		S	
European Associations (Healthcare)		L		Internet / Direct		S/N	
European Associations (Vaccine–Industry)		L		Internet		S	
National Ministry of Health		H		Internet / Mass Media / Social Media		S	
National Surveillance Institute for Public Health		M		Internet / Mass Media		S	
National Medicines Regulatory Agency		M		Internet / Mass Media		S	

[32] H: High, M: Medium, L: Low
[33] S: Supporting, N: Neutral, O: Opposing

Non-Governmental Organisations	M	Internet / Social Media	S/N/O
Prefectures / Municipalities	H	Internet / Mass Media / Direct	S
Hospitals / Clinics	H	Direct	S
Local / Regional health services	H	Direct	S
Primary schools	H	Direct	S/O
General Practitioners	H	Direct	S/N/O
Ethnic / Minority / Religious groups	M	Social Media / Direct	S/N/O
Local political parties	M	Mass Media / Social Media	S/N/O
Opinion leaders	H	Mass Media / Internet	S/N/O
Anti-vaccine groups	M	Social Media / Internet	O
Vaccine manufacturers	L	Internet	S
Vaccine wholesalers	L	Internet	S
Vaccine exporters	L	Internet	S
Mass Media – Healthcare experts	H	Mass Media	S/N/O
Social Media – Healthcare experts	H	Social Media	S/N/O
Science journalists	M	Mass Media / Social Media / Internet	S/N/O

In accordance with the above, except those 'Definitive' stakeholders that were targeted by using the salience model, there are still more stakeholders who would be necessary to approach, evaluate, better understand and effectively address their requirements as regards the type and quality of information needed. These stakeholders with medium/high levels of immediacy or direct impact on public perceptions and possibly mixed attitudes or behaviour in outbreak communication are the following:

- Non-Governmental Organisations
- General practitioners
- Healthcare workers and professionals
- Primary schools
- Ethnic / minority / religious groups
- Local political parties
- Opinion leaders
- Science journalists
- Media

These stakeholders could be considered as 'external key stakeholders', not directly involved in policy or decision-making about the strategies followed, however they are important actors in the outbreak communication, formulating and influencing opinions towards immunisation.

Without doubt the media play a very special and important role, not only in outbreak communication, but public health in general. There are continuing debates regarding the level of influence and the extent to which mass media and social media influence public behaviour and attitudes. Nonetheless, it is not only the general public that shapes its behaviour depending on the coverage of an unusual event, but also the officials and policy-makers, whose opinions and decisions are shaped in response to what is also transmitted through the media and/or the internet, and not through direct contact. In this direction, the media need to assume greater responsibility and better understanding of the demands and criticality of events such as pandemic outbreaks, where information not only need to be swift, but most importantly, precise.

As part of this task, we have identified and categorised all different types of stakeholders, having direct or indirect involvement in the communication process during a pandemic outbreak. It is widely accepted that different stakeholders have different needs when it comes to communication, as well as the importance of effective communication in creating relationships based on confidence, responsibility, trust and transparency. In situations of an infectious disease outbreak, a series of questions arise relevant to communication, relevant to the content, the timing, the mechanisms, the requirements and so on. The next task (T2.2 – Stakeholder communication requirements) in Work Package Two – New challenges and new methods for outbreak communication – explores this area, aiming to determine the information needs of individuals and groups of stakeholders, as a combination of the type and format of information available and the information's value to each stakeholder.

4. CONCLUSIONS AND RECOMMENDATIONS

While a number of different sectors (e.g. tourism, travel, trade) have been considerably successful in meeting the myriad of demands that came about with the dawn of a new form of globalisation – characterised by the complex patterns in the flow of information as well as the increasing mobility of people around the world – the pandemic outbreaks of the last decade, showed that solution to one problem brings us face to face with another one. This problem, or issue rather, is no other than 'global health'. In an article written for the UN Chronicle Online[34], global health is described to be "[…] *far more multifaceted than is often perceived, and requires more than development aid to achieved. In a global world, we need an integrated approach which includes action on social determinants, social protection, the support for major health care programmes at the local and country level, and the global agreements and commitments necessary to address the responsibilities and approaches of the many actors involved"* (I. Kickbush, 2011).

This statement depicts well the complicated nature of ensuring (or securing) well-being and health for people around the world; however, if we consider the sudden outbreak of a communicable

[34] Ilona Kickbush (2011). Advancing the global health agenda. UN Chronicle Online, 48 (4), available from http://www.un.org/wcm/content/site/chronicle/home/archive/issues2011/7billionpeople1unitednations/advancingtheglobalhealthagenda

disease, more layers of complexity are added in this fragile structure. The outbreak of an infectious disease (extending to incorporate other features, such as risk communication or security monitoring) requires involvement and mobilisation of stakeholders in various levels, from intergovernmental organisations to healthcare workers and professionals, and members of the community, broadly defined in this report as 'public'. This need for collaboration of stakeholders from different fields is also highlighted in the Pandemic Influenza Preparedness Framework, published by the World Health Organization (2011), which calls for participation of the various member countries, the industry and other key stakeholders, for implementing a global approach to pandemic influenza preparedness and response.

The issue of global health moved up on the agenda particularly as a response to the most recent H1N1 (2009) pandemic. The European Union took measures to coordinate efforts between Member States, by establishing different communication channels with the participation of specialised institutions such as the European Centre for Disease Prevention and Control (ECDC) and European Medicines Agency (EMA), which in turn collaborated closely with national public health authorities. Recently, WHO/Europe and ECDC (2011)[35] jointly held a series of four workshops on lessons learnt from the 2009 pandemic, with government officials and representatives from all European countries as participants, where once again was stressed the importance of inter-country collaboration and interoperability, for the purpose of sharing best practices and experiences between countries, development of a combined approach for increasing vaccine access and cross-border sharing of medicines. In addition, the need for more inter-country research activities on antiviral drugs and vaccines was suggested, for population immunity and individual level immune responses to different subtypes of influenza.

Even before the 'communication' variable is inserted in the equation of a pandemic outbreak, it is clear that certain groups of stakeholders, particularly international organisations, are 'embed by default' in strategies concerning the communication of messages to the public during an outbreak. Nonetheless, in a shared-power world where, according to Kettl (2002), no organisation 'contains' the problem, it becomes clear that the actions of these organisations alone are not sufficient for dealing effectively with challenges posed in outbreak communication, especially with respect to vaccine compliance. Therefore, the stakeholder analysis in the frame of outbreak communication has not only been useful for understanding the dynamics and relationships between different stakeholders, but also important to understand the role and potential each stakeholder has, for effectively becoming involved in the process.

In this exercise of identification and mapping of stakeholders in outbreak communication, there has been an attempt to approach this field from many different angles, and present in a comprehensive manner the diversity and range of key actors involved in the process. The challenge in this task has been to identify stakeholders that usually are not exposed or do not appear in the front lines of outbreak communication, nonetheless have enough power to influence decisions of policy-makers or behaviours of the general public. It was of particular importance to explore the ways that each

[35] WHO Regional Office for Europe & European Centre for Disease Prevention and Control (2012). *Key changes to pandemic plans by Member States of the WHO European Region based on lessons learnt from the 2009 pandemic*, <http://www.ecdc.europa.eu/en/publications/Publications/1203-MER-Joint_WHO_EURO_PiP%20Workshops%20Summary.pdf>, viewed 17 June 2012.

stakeholder can affect and be affected, especially in the age of new social media. To this extent, it was recognised the need for national public health authorities to better make use of the possibilities provided in two-way communication. This could potentially be helpful in the direction that general public becomes more actively involved and engaged in the response phase of an outbreak, thus adopting rational behaviour and assuming responsibility for certain actions, as individual stakeholder.

The issue of accountability has also been highlighted in this report, which proves to be a thorny issue in the cases of pandemic outbreaks. It has been suggested that accountability issues start from a level as high as that of Member States, which tend to enter into voluntarily (instead of binding) commitments towards health (Gostin & Mok, 2009). Issues of accountability exist anywhere there is a lack of a regulatory framework or inefficient mechanisms to support an immediate intervention by a competent authority. For this reason, is paramount to better define the roles and relationships between the different institutions and agencies, as well as the national public health authorities, which on a second level could translate into redefining the role of the state in relation to different stakeholders and entities deemed to be particularly important in outbreak communication.

A key recommendation as regards the mapping of stakeholders is to leave open the possibility that new entities or stakeholders might be introduced and be relevant in future pandemics, as the model of public-private partnerships progressively becomes established as the model that can effectively overcome particular challenges, especially in the vaccine supply chain. In such case where specific roles are assigned to specific partners, it might be possible for public health authorities to engage more effectively with stakeholders operating on a national level, and decide the strategy to be implemented together with all groups of stakeholders involved in the process. To achieve this, all different types of stakeholders need to be evaluated in terms of specific requirements and needs they might have with regard to information they receive and transmit during the most critical phases of a pandemic outbreak.

REFERENCES

Alyusina, N. & Kucheruk, A. (2010). The applicability of a risk communication concept for Ukraine as a method of enhancing public confidence in State authorities. *Public Policy and Administration*, *32*, 94-103.

Beck, U. (2000). *Risk society: Towards a new modernity*. London: Sage.

Brugha, R. & Varvasovszky, Z. (2000). Stakeholder analysis: A review. *Health Policy and Planning*, *15* (3), 239-246.

Bryson, J. & Crosby, B. (1992). *Leadership for the common good: Tackling public problems in a shared power world*. San Francisco, CA: Jossey-Bass.

Calain, P. (2007). Exploring the international arena of global public health surveillance. *Health Policy Plan, 22*, 2-12.

Covello, V. T. (2002). *Message mapping: World Health Organisation workshop on bioterrorism and risk communication*. Geneva, Switzerland: WHO.0

Covello, V. T. & Allen, F. (1988). *Seven cardinal rules of risk communication*. Washington, DC: United States Environmental Protection Agency, Office of Policy Analysis.

Covello, V. T., Peters, R. G., Wojtecki, J. G. & Hyde, R. C. (2001). Risk communication, the West Nile Virus epidemic, and bioterrorism. *Journal of Urban Health: Bulletin of the New Academy of Medicine*, *78* (2), 382-391.

European Commission (2010). *Flash Eurobarometer 287: Influenza H1N1 Analytical Report*. The Gallup Organisation, Brussels: GESIS.

European Commission (2010). *Assessment report on EU-wide pandemic vaccine strategies* [TOR2]. Retrieved from http://ec.europa.eu/health/communicable_diseases/docs/assessment_vaccine_en.pdf

European Commission (2011). *Report of the stakeholder consultation on health security in the European Union*. Retrieved from http://ec.europa.eu/health/preparedness_response/docs/healthsecurity_report_en.pdf

European Medicines Agency (2011). Pandemic report and lessons learned: Outcome of the European Medicines Agency's activities during the 2009 (H1N1) flu pandemic. Retrieved from http://www.ema.europa.eu/docs/en_GB/document_library/Report/2011/04/WC500105820.pdf

Fauci, A. (2001). Infectious diseases: Considerations for the 21st century. *Clinical Infectious Diseases*, *32*, 675-685.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston, MA: Pitman.

Friedman, A. L. & Miles, S. (2006). *Stakeholders: Theory and practice*. Oxford University Press.

Giddens, A. (1990). *The consequences of modernity*. Stanford University Press: Stanford.

Gostin, L. O. & Mok, E. A. (2009). Grand challenges in global health governance. *British Medical Bulletin*, *90*, 7-18.

Greco, D., Stern, E. K. & Marks, G. (2011). *Review of ECDC's response to the influenza pandemic 2009/10*. Stockholm: ECDC.

Hannerz, U. (1991). Scenarios for peripheral cultures. In Anthony D. King (Ed.), *Culture, globalization and the world system*. London: Macmillan.

Held, D. & McGrew, A. G. (2000). *The global transformations reader: An introduction to the globalization debate*. Malden, MA: Polity Press.

Imperial College London (2007). Project Stakeholder Analysis. www3.imperial.ac.uk

Kaufmann, J. R., Miller, R. & Cheyne, J. (2011). Vaccine supply chains need to be better funded and strengthened, or lives will be at risk. *Health Affairs*, *30* (6), 1113-1121.

Kettl, D. (2002). The transformation of governance: Public administration for twenty-first century America. Baltimore: MD: John Hopkins University Press.

Labonté, R. & Gagnon, M. L. (2010). Framing health and foreign policy: Lessons for global health diplomacy. *Globalisation and Health*, *6*, 14.

Mayers, J. (2005). Stakeholder power analysis. London: IIED. Retrieved from http://www.policypowertools.org/Tools/Understanding/docs/stakeholder_power_tool_english.pdf

McLuhan, M. (1964), Understanding media: The extensions of man. New York: Macmillan.

Mendelow, A. (1991). *Proceedings of the 2nd International Conference on Information Systems*, Cambridge, MA.

Mitchell, R. K., Agle, B. R. & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *The Academy of Management Review*, *22* (4), 853-886.

Murray-Webster, R. & Simon, P. (2007). Making sense of stakeholder mapping. *Project Management Practice*, *2007* (2), 12-13.

National Research Council (1989). *Improving risk communication*. Washington, DC: National Academy Press.

Pappas, G., Hyder A. A. & Akhter, N. (2003). Globalization: Toward a new framework for public health. *Social Theory and Health*, *1*, 91-107.

PATH & World Health Organization (2011). *Outsourcing the Vaccine Supply Chain and Logistics System to the Private Sector: The Western Cape Experience in South Africa*. Seattle: PATH.

Project Management Institute (2008). *A guide to the project management body of knowledge* (4th Edition). PMI: Atlanta, USA.

Post, J. E., Preston, L. E. & Sachs, S. (2002). *Redefining the corporation: Stakeholder management and organizational wealth*. Stanford, CA: Stanford University Press.

Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C. H. & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, *90*, 1933-1949.

Robertson, R. (1992). *Globalization: social theory and global culture*. London: Sage.

Robertson, R. (1995). Glocalization: Time-space and homogeneity-heterogeneity. In M. Featherstone, S. Lash, and R. Robertson (Eds), *Global modernities*. London: Sage.

Russo, T. (2012). Pandemic Vaccine Distribution Policy for the Twenty-First Century. *Homeland Security Affairs* 8, Article 4. Retrieved from http://www.hsaj.org/?article=8.1.4

Sandman, P. (2012). Responding to community outrage: Strategies for effective risk communication. American Industrial Hygiene Association. Available at http://psandman.com/media/RespondingtoCommunityOutrage.pdf

Transatlantic Taskforce on Antimicrobial Resistance (2011). *Recommendations for future collaboration between the U.S. and EU*. Retrieved from http://ecdc.europa.eu/en/activities/diseaseprogrammes/tatfar/documents/210911_tatfar_report.pdf

U.S. Environmental Protection Agency (2007). *Effective risk and crisis communication during water security emergencies*. *Summary report of EPA sponsored message mapping workshops*. Retrieved from http://cfpub.epa.gov/si/si_public_record_report.cfm?address=nhsrc/&dirEntryId=165863

U.S. Public Health Service (1995). *Risk communication: Working with individuals and communities to weigh the odds*. Prevention Report, February/March 1995.Retrieved from http://odphp.osophs.dhhs.gov/pubs/prevrpt/archives/spring95pr.pdf

World Bank (1996). *Participation sourcebook*. Washington D.C., USA: The International Bank.

World Health Organization (2004). *Sixth Futures Forum on crisis communication. Reykjavik, Iceland, 10-11 May 2004*. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0004/90535/E85056.pdf

World Health Organization (2005). *WHO outbreak communication guidelines*. Retrieved from http://www.who.int/infectious-disease-news/IDdocs/whocds200528/whocds200528en.pdf

World Health Organization (2008). *Outbreak communication planning guide*. Retrieved from http://www.who.int/ihr/elibrary/WHOOutbreakCommsPlanngGuide.pdf

World Health Organization (2009). *WHO guidelines for pandemic preparedness and response in the non-health sector*. Retrieved from http://www.who.int/influenza/preparedness/pandemic/2009-0808_wos_pandemic_readiness_final.pdf

World Organisation for Animal Health (2011). *Terrestrial animal health code – Volume I – General Provisions* (20th Edition). Retrieved from http://www.oie.int/doc/ged/D10905.PDF