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To mediate climate change:

A comparative study of Swedish news media representation of climate change risks

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Abstract

One of the most serious global issues presently is climate change. News media has an important role in informing the public about issues such as climate change and contributes to shape public opinion and the political agenda. This thesis therefore asks questions of what and how climate change risks have been represented by Swedish news media. As recent research has found that framing climate change risks as a public health issue, as well as situating climate change risks in the spatial locality of media recipients, influences media recipients' emotional response and will to engage with the issue of climate change, such inquiries have also been examined. Further, this study compares two given years, namely 2009 and 2015, to investigate if there is any indication that media representation of climate change risks has shifted. The study was conducted by reviewing and coding several hundred news articles published in 2009 and 2015 by five major Swedish newspapers. The study found that climate change risks to a large extent were framed as a public health issue in both 2009 and 2015. Further, climate change risks were by Swedish media mainly spatially situated outside of Sweden in both examined years. Overall, news media representation of climate change risks were similar in 2009 and 2015. The findings suggests that media recipients' engagement with climate change have barely changed between 2009 and 2015, based on media representation and media recipients' emotional response to media representation of climate change risks.

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List of abbreviations

ECA	–	Ethnographic content analysis
EPA	–	United States Environmental Protection Agency
IPCC	–	Intergovernmental Panel on Climate Change
SMHI	–	Swedish Meteorological and Hydrological Institute
UNFCCC	–	United Nations Framework Convention on Climate Change

Chapter 1: Introduction and background

"We knew the world would not be the same", words spoken by the 'father' of the atomic bomb – Robert Oppenheimer – as the atomic bomb *Little Boy* had exploded over Hiroshima on august 6th 1945 ("J. Robert Oppenheimer: 'I Am Become Death, The Destroyer of Worlds.'" 2016). He was not alone in believing this. As stories of the horrific consequences of this bomb were spread throughout the world, it was clear to both him and everyone else what impacts an atomic war could have and that an atomic war perhaps would be the greatest risk towards humanity for a long time to come. However, during the 21st century, another threat – climate change – has been recognized by many as perhaps the greatest current threat towards humanity and planet earth (e.g. Carle 2015). While the risks and consequences of an atomic bomb explosion could be understood by all, for many climate change and the risks climate change brings, remains being an issue difficult to grasp, thus, still not being a high priority for many (Nisbet 2009: 15, Leiserowtiz 2006: 46). Indeed, even though the outcomes of climate change affects, or will affect, societies all around the world, the outcomes of climate change are often still perceived as mainly affecting the environment (Maibach et al. 2010). This in turn leads to a lack of public engagement to the issue of climate change (ibid.).

There are several reasons for the public having difficulties to understand climate change. First off, climate change is a multifaceted process and the perceptions of whom, what and to what extent climate change risks constitutes a threat, is of a rather complex and distant nature (O'Brien et al. 2006: 68). Complex in the sense that climate change constitutes threats in multiple ways, e.g. by increasing occurrences and enhancing already existing natural phenomenon, and distant in the sense that it often affects places and people often far away from an individual's temporal and spatial reality, for instance through the picturing of polar bears on melting ice shelves in the arctic (NASA - "The Rising Cost of Natural Hazards: Feature Articles" 2016, Spence, Poortinga and Pidgeon 2011, Leiserowitz 2005). Moreover, climate change is "beyond our perceptual capacity of experience and is [mainly] based on expert knowledge" (Höijer 2010: 2). Hence, most individuals have to rely on the information presented by others, in order to grasp the consequences of climate change. This raises the question of how climate change risks so have been communicated and if such a communication has evolved into being more efficient in invoking an engagement for the climate change issue among the public.

One of the most important instances for informing the public about climate change is news media. As Boykoff and Boykoff states, "Mass-media coverage of climate change is not simply a random amalgam of newspaper articles and television segments; rather, it is a social relationship between scientists, policy actors and the public that is mediated by such news packages" (Boykoff and Boykoff 2007). Thus, media have an essential role in constructing and communicating climate change issues to the public,

as it can shape public opinion and help creating policies on climate change (e.g. Bennet 1996). In order for public opinion to form, it is essential to talk about the perception of media representation among media recipients and the public. For instance, the emotional response – e.g. feelings of hope, frustration and moral obligations – to climate change risks have recently been found to influence individuals' perception of climate change, which in turn affects individuals' engagement to climate change (e.g. Roeser 2012, Myers et al. 2012). Such emotional response is mainly due to *how* a climate change story is framed – i.e. what is constituted as 'the problem' and what aspects that are emphasised in a story – as well as *where*, in terms of what spatial space a risk is constructed and communicated to be situated in. Thus, perceptions of climate change can in general be linked to the perception of if climate change is global or local, and how people or places in an individual's locality or non-locality will be affected. Moving on, as perception has been argued to contribute to shape public opinion on climate change, public opinion in turn is crucial for policy making, risk governance and the political process in general on climate change risks (Jönsson 2011, Boykoff 2011). Hence, media representation of climate change and climate change risks is of great importance (Boykoff and Boykoff 2007, Höijer 2010).

Due to media's important role as a representative of climate change risks, it is argued to be of interest to examine how such representation has been made. Media in Sweden is an interesting and relevant case as Sweden is one of the most environmentally friendly countries in the world (Dual Citizen 2014) as well as its' population being more concerned with climate change than the average European population (TNS political & social 2015). Some studies have already examined media representation in Sweden (e.g. Jönsson 2011, M. Boholm 2008, 2009), but no previous research have compared if media representation of *how* and *where* climate change risks are constituted might have evolved over a period of time, nor the emotional response from such representation. Hence, it is of interest to examine and discuss if such an evolvement in media representation of climate change has actually occurred and, based on the emotional response to media representation of climate change risks, if it could be argued that the public perception and engagement to climate change might have increased or not based on media representation.

Chapter 2: Aim and research questions

The aim of this study is to explore how climate change risks are represented, in terms of how they are socially constructed and communicated, by media in different periods of time; further, what effects such representations – including how they are framed and spatially situated – could have on the public engagement to the issue of climate change.

This is relevant and essential to study since, as stated in the introductions chapter, media greatly influences the public perception of climate change, which in turn plays a major role for policy making and risk governance (e.g. Jönsson 2011, Boykoff and Boykoff 2007, Brody et al. 2007). For instance, research has shown that depending on how a climate change risk is framed as well as where the risk is described to be situated, can have significant implications on news media recipients' emotional response and engagement in the issue climate change (e.g. Myers et al. 2012, Lorenzoni, Nicholson-Cole and Whitmarsh 2007). This study therefore contribute to such previous research by, firstly, examining the appliance of different framings and the spatial situating of climate change risks in Swedish news media; and secondly, by comparing if such media representation has shifted in different periods of time. Neither of these factors have been found to have been investigated before in Swedish media and should provide an interesting picture of media representation and its' effect on media recipients.

This study is based on a constructivist approach of the representation of climate change risks, in which the journalistic process is driven by journalistic norms within ideologically biased systems (e.g. Carvalho 2007, Bennett 1996). By this perspective it becomes relevant to examine media's representation of the issue of climate change risks as a way of discovering how an article is produced in order to be published as well as produced in order to inform the public. Further, 'climate change' is a relevant issue to examine as it is a contemporary, constant and complex process (IPCC 2014). Climate change's far reached and wide ranged implications allows for social constructions and communication of climate change risks that can be, firstly, constituted as threatening multiple different actors, systems, institutions etc., and secondly, formulated to occur in numerous spatial/geographical spaces.

Hence, it is the socio-cultural construction and communication of climate change risks, influenced by journalistic restrictions such as the norms and ideologically biased systems from which journalists operate, which this study seeks to identify and analyse. This is done in order to examine and compare how the issue of climate change risks has been represented within news media and what emotional response such representation can evoke in media recipients. The years chosen for examination and comparison are 2009 and 2015, as research on media recipients' emotional response to media representation has mainly been found to have been published in-between these years (further

motivation of years chosen in the Methodological-chapter). Thus, in order to examine this subject, the following research questions are asked:

1. How are climate change risks represented in Swedish newspapers in the years of 2009 and 2015?

In order to answer this question, the following questions will have to be answered:

- What sort of climate change risk-categories can be identified to have been communicated by the printed Swedish newspapers *Aftonbladet, Expressen, Dagens Nyheter, Göteborgsposten* and *Svenska Dagbladet* in the years of 2009 and 2015?
- To what extent have these climate change risk-categories been communicated on in 2009 and 2015? In terms of examining the occurrences of each category in each year and the percentage share each category and frame constituted in each year.
- Were there *relationship of risk-categories* and *object at risk-frames* in either 2009 or 2015, which were, or were not, identified to have been communicated in the other year examined?

2. How, and to what extent, does media representation differ between 2009 and 2015, considering the framing and spatial situating of climate change risks that affect media recipients' emotional response?

In order to this question, the following questions will have to be answered:

- To what extent have risks framed as affecting public health, been communicated by the examined newspapers in 2009 and 2015? In terms of occurrences of such a frame in each year as well as the percentage share such frame constituted in each year. Further, if the representation on such a frame differed between the two years examined.
- To what extent have the examined newspapers communicated climate change risks as being situated in the spatial/geographical space of Sweden? In terms of occurrences of articles situating climate change risks in Sweden for each examined year, as well as the percentage share such situating constituted for each examined year. Further, if the situating of the spatial/geographical distance differed between the two years examined.

2.1: Relevance to Global Studies

Climate change has come to the fore of international attention in recent decades, being a global phenomenon bound to impact virtually all places and lives on earth. Climate change is therefore an issue non-similar to any other as it cannot be ignored by anyone while demanding action from all. The major threat it constitutes therefore stresses any option available that can make us understand climate change, both from a local and global perspective, and further provide us with an understanding on how to deal with it. Media representation becomes relevant in this instance, as media reporting invites us to understand climate change in local and distant contexts. Media representation is a way to see and understand the world, *what* places and people that are heard and affected by climate change as well as *how* these places and people are portrayed to be affected. Media representation also provides an insight into how we see and understand our locality in the context of the global. Does media representation polarize us from the global, or does media representation display us as being a part of the global. Perspectives on such inquires can help us understand others and ourselves, the local and the global, in order for us to make the best decisions possible to address climate change.

2.2: Disposition and delimitations

In order to answer the research questions, this study will firstly present relevant previous research made on the subject of media, climate change and climate change risks, before the theoretical framework including definitions of concepts will be elaborated on. Thereafter the methodology of this study will be presented. This includes the procedure for identifying, reviewing and categorizing the data. After the methodology-chapter, the results from the data collection will be presented along with a comparative analysis and discussion of the results in relation to the research questions and theoretical framework. Lastly, conclusions are presented in accordance with the aim and research questions of this study.

As this study is interested in examining a collected and common representation of climate change risks given by newspapers to media recipients, the study will not examine possible differences between different newspapers. Thus, it is not the newspapers per se that are of interest, but rather what *they* are communicating. Moreover, the characteristics of how media representation portrays climate change risks, for instance in terms of how they *personalize* or *dramatize* climate change risks, will not be elaborated on. The decision of not examining all variables mentioned above are based on the limitations of time and space under which this study is performed, in which the focus have been to collect sufficiently with data in a reliable manner in order to examine and discuss climate change risks and the emotional response to these risks.

Chapter 3: Previous research

Research on media and climate change has grown substantially in the last decade, generating more than three times as many academic publications and articles on the issue between 2005 and 2015, than between 1985 and 2005 ("Media Climate Change – Google Scholar" 2016). Among this research there are studies that have also examined if media has increased their coverage on climate change. For instance, Schmidt, Ivanova and Schäfer (2013) reviewed news media in 27 countries and found that coverage on climate change had increased in all of the researched countries, especially in carbon dependent countries bound by the Kyoto protocol (see also: Sampei and Aoyagi-Usui 2009, McComas and Shanahan 1999). Further, it has been found that such an increase in coverage can be linked to media coverage on the rising number of climate summits (e.g. Schäfer, Ivanova and Schmidt 2013) while others also link it to climate events and hazards (e.g. Boykoff and Roberts 2007). Such increase in coverage has by some been found to increase the knowledge and concern for climate change among the public (e.g. Sampei and Aoyagi-Usui 2009, Zhao 2009), while others has found that the public's concern and perception of climate change does not necessarily change due to increased media coverage (e.g. Leiserowitz 2006).

The public knowledge and perception of climate change is, however, dependent on how media understands and communicates it. This has been researched upon rather extensively from several different perspectives. It has for instance been researched how ideological standpoints for different newspapers, and journalistic norms, influences the discourse and debate on climate change and climate change risks (e.g. Smith 2005, Weingart, Engels and Pansegrau 2000, Olausson 2009, Boykoff 2011, Carvalho and Burgess 2005). In which Boykoff and Boykoff (2007) found that journalistic norms lead to lacking and incorrect information on climate change. However, another reason for journalists to communicate incorrect information on climate change is also the uncertainty and complexity of it (e.g. Boykoff 2011, Beck 2009, Smith 2005). For instance, Weingart, Engels and Pansegrau (2000) stated that media has a tendency to translate scientific uncertainty into certainties. Moreover, it has been found that journalists are lacking in and/or are unwilling to communicate such uncertainties and complexities (e.g. Olausson 2009). Thus, journalistic norms and lack in communicating scientific information has therefore been found to have led to a gap between how the scientific community and the public understands and perceives climate change and climate change risks (e.g. Etkin and Ho 2007, Boykoff and Robert 2007, Smith 2005), and also to a gap between how media and the public understands climate change and climate change risks (e.g. Olausson 2011).

Studies has also been carried out which focuses more specifically on how media communicates climate change risks. Some of them has already been mentioned above, such as Weingart, Engels and

Pansegrau (2000) exploring climate change risk communication within a journalistic process, and Etkin and Ho (2007) examining the discourse and perceptions of climate change risks. Further, Jönsson (2011) carried out a study on how Swedish media communicated environmental risks in the Baltic Sea, while Boholm (2008, 2009) carried out a study on how media communicated climate change risks in the local context of Gothenburg's river valley. Moreover, Nisbet (2009) and Hart and Feldman (2014) have carried out studies on how media frames climate change risks and hazards, in which the latter mentioned found that American media mainly frames it as an environmental risk. These two studies have been highly influential on this study's approach of identifying and categorizing risks. Studies have also been carried out that examines how the framing of climate change risks matters for media recipients' emotional response to the issue of climate change (e.g. Maibach et al. 2010, Myers et al. 2012) as well as how the spatial/geographical distance of where a risk is described to occur, matters for the media recipients' emotional response to the issue of climate change (e.g. Lorenzoni, Nicholson-Cole and Whitmarsh 2007, Leiserowitz 2005). These studies have also been influential on this study and will be discussed further in the upcoming chapters.

Chapter 4: Theoretical framework and key concepts

The following chapter is developed in order to define concepts and provide a theoretical basis upon which the method can be developed and the results of this study can be analysed. This chapter will firstly define a *climate change risk.* Thereafter, the production and influence of climate change risks in media will be discussed before a risk framework as well as a theoretical basis for *framing* will be elaborated on. Lastly, an analytical framework elaborating on media recipients' emotional response to media representation of climate change risks will be presented.

4.1: Constructing a climate change risk

4.1.1: Climate Change

Global warming and *Climate change* are two concepts that have been used, and probably also in some instances defined, synonymously for describing long term shifts in the climate. However, using the National Aeronautics and Space Administration's (henceforth: NASA) definitions, *global warming* only refers to "the long-term increase in Earth's average temperature", while the concept of *climate change* refers to "any long-term change in Earth's climate, or in the climate of a region or city. This includes warming, cooling and changes besides temperature" (NASA - "What Are Climate and Climate Change?" 2016). Thus, climate change as a concept allows for greater examination of changes in the climate that are not only referring to the whole planet, and not only to an average increase of the global temperature. Hence, climate change is argued to be the preferable concept of the two for this study and will therefore be the one applied.

There are several definitions of climate change, but a preferable starting point is to use the formulation from the United Nations Framework Convention on Climate Change (henceforth: UNFCCC) from 1994, which describes climate change as:

> *"[…] a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."* (UNFCCC 1992)

To continue from this formulation regarding the observed changes on the climate and its causes, the Intergovernmental Panel on Climate Change (henceforth: IPCC) states that:

> *"Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate change have had widespread impacts on human and natural systems."* (IPCC 2014: 2)

UNFCCC's and IPCC's definitions indicates that climate change is something that is happening continually, having impacts both previously, presently and in the future. Thus, climate change is a

process that have, and have had, impacts on human and natural systems, and that contributes to constituting future risks on human and natural systems. This means that climate change constitutes risks, thus, leading to that *climate change risk* has to be defined. Nevertheless, before that, the concept of *risk* itself has to be defined.

4.1.2: Risk

Concerning risks, it is, firstly, important to distinguish *risk* from concepts such as *catastrophes* or *hazardous events.* Risk means "the *anticipation* of the catastrophe" (emphasis in original), thus implying that future catastrophes or hazardous events may threaten us and may occur (Beck 2009: 9). As these future threats, or risks, are present to us they become a force that stick in our minds and affects our decisions and actions both on an individual and political level (ibid: 9-10). *Catastrophes* or *hazards* on the other hand, implies that a risk *is* occurring or *has* occurred, thus not being risk that *can* happen (ibid: 9). There are, however, a number of approaches to how a risk is constituted. Bradbury (1989) identified that the concept of risk was formulated in two different ways, either as a physically given attribute, in which a risk is seen as being made up of objective facts that could be predicted and controlled; or as a socially constructed attribute, in which the process of identifying and estimating a risk is never independent from values and other factors that shape the human mind and thinking process (380-381).

The first approach mentioned is rather technical, in which risk could be seen as the product of a probability and consequence assessment of a dangerous or harmful event (ibid: 382). This approach to risk assessment can be useful in decisions concerning, for instance, engineering. However, it is argued to be insufficient when assessing societal decisions, because, not only is this technical approach limited to only include technical and economic factors, but it also fails to account political dimensions, for instance by weighing in the opinions and will of both experts and public demand, as well as ethical dimensions such as questions of values (ibid: 383). The second approach is grounded in the argument that there is a "value-embedded nature of all claims about risk" in which the focus is on the social and cultural context through which risks are constructed and communicated (ibid: 389). As this approach emphasize that the perception of risk is embedded in humans' differing values and experiences, the perception of a risk thus differs among humans (ibid.). How a risk is assessed, communicated and perceived is therefore dependent on socio-cultural factors, hence a risk is seen as a socio-cultural construct. Following this argument, the risks that are to be identified in this study are constructed in a context of journalists who operate in their respective cultural context, both as individuals and as journalists. Thus, the material produced by journalists could be argued to be a process of producing and reproducing certain socio-cultural factors. This socio-cultural approach towards risk is preferable

for this study, as it allows for questions to be asked of how risks are understood, by journalists and the public.

4.1.3: Climate change risk

Following the theoretical grounds laid out above on climate change and risk, a climate change risk can be constructed. However, this is a tricky procedure. As stated by Etkin and Ho (2007), climate change is complex as there is a great uncertainty of how human and natural systems affect each other today and in the future, thus making a climate change risk assessment a "post-normal science" in which some climate change risks may not be identified or fully understood (623). In order to manage these issues, it is of importance that risk has previously been defined as a social construction. By doing so, the focus of fully understanding a climate change risk has shifted from *what* a risk is, to *how* a risk is understood; by scientists, policy makers, the public, and by journalists. Hence, the difficulty of identifying a climate change risk shifts to identifying that someone finds something being at risk, either fully or partly due to climate change. For instance, a drought might be identified as being caused by climate change, but if climate change is the only variable that has caused this drought, or if is partly the cause, is a complex valuation to make. A climate change risk therefore becomes an estimation, in which the risk is regarded a climate change risk if climate change has been stated as a variable that contributes to producing the risk. As this study will review the climate change risks formulated by journalists, it is them, and/or the sources they rely on, who performs this estimation and communication of, if and how a climate change risk is constituted. Consequently, it is these estimations of climate change risk which this study will rely on. Therefore, the following section will elaborate on media's functioning and relation to communicating climate change and climate change risks, before defining the risk framework used for this study.

4.2: Media production and influence

As a definition of climate change risk has been formulated, it becomes essential for this study to explore the functioning and influence of news media. This is of importance for this study as, firstly, a way of understanding media representation of climate change risks; and secondly, as a way of understanding why framing theory has been applied in this study. Thus, firstly the production of media content and climate change risks will be elaborated upon before elaborating on the influence media representation have on media recipients and the public.

4.2.1: Production of media content and climate change risks

According to Barnett (2003), media outputs of news is produced "out of the complex knowledge, meanings, and performances produced and distributed by a variety of different actors with different interests" (as cited in Smith 2005: 1473). Bennett argues that these factors, that shape the journalistic

process, are in turn shaped by three different norms: journalistic norms, political norms and economic norms (Bennett 1996: 375). Journalistic norms includes issues such as objectivity and fairness, political norms includes encouraging political accountability by informing on and questioning political processes or elected officials, and the economic norms concern reporting news in an efficient and profitable way (ibid., see also: Boykoff and Boykoff 2004: 126). However, the journalistic process if often reliant on acquiring information from official and powerful sources (Bennett 1996: 376), which also leads to the issue of journalistic bias and/or ideology as a driver of the journalistic process and journalists. Carvalho (2007) argues that the sources, or *agents,* (and the opinions and perspectives these agents represent) that are given room in the news, are 'chosen' based on the ideological standings of the journalist and/or news agency the journalists is part of (237). Further, Carvalho argues that the journalistic process of interpreting *facts* is also a consequence of an ideological standpoint, in which different 'truths' are presented by journalists in a different rhetorical qualitative manner as well as to a different quantitative extent (ibid.). For instance, such 'truths' could be in terms of the *framing* – i.e. what aspects that are emphasised (Myers et al. 2012: 1106) – of a story. Lastly, Carvalho argues that the information provided to a journalist, is also rooted in the ideology and goals of the source of the information (Carvalho 2007: 237). To put the issue of ideology in other words, Hall et al. (1978) described that the journalistic process "is not the vast pluralistic range of voices which the media sometimes are held to represent, but a range *within distinct ideological limits"* (emphasis in original, as cited in Raijmaekers and Maeseele 2015: 9).

Regarding when and *what* news media and journalists decide what climate change story that should be reported, they operate in accordance with the journalistic norms and bias described above. However, they also operate in accordance with the issues, events and information that are available to them, as well as journalistic norms that are influencing how newsworthy media and journalists believe a story is (Weingart, Engels and Pansegrau 2000: 263, Boykoff 2011: 100). Boykoff (2011) mainly identifies three journalistic norms that are at play when it is decided upon if a climate change story is newsworthy; being: *personalization*, *dramatization* and *novelty* (100). *Personalization* means that stories that can be personalized, in terms of highlighting a human tragedy or triumph, has a greater attraction to be communicated than stories concerning abstract social and/or political issues (ibid: 100-101). *Dramatization* means that stories, favourably a crisis, which is occurring presently, is favourable to a story concerning a process or something that is ought to happen in the future (ibid: 104). Lastly, *novelty* is also an important factor as it is argued that new and 'fresh' stories are favourable to repeating a persistent issue (ibid: 104-105). Hence, climate change stories that respond to these favourable norms have a greater chance at making it to the press.

As it has been formulated when and *what* sort of climate change stories that media publishes, the question remaining is *how* they are formulating the news concerning climate change. Firstly, previous studies have shown that media are generally reluctant to report scientific information. This reluctance to report scientific information is based on the fact that scientific information contains uncertainties, which for media is not found as interesting news, creates obstacles for extensive media coverage on an issue, and that such uncertainties undermines the message and consequently the demand for collective action on the issue (Weingart, Engels and Pansegrau 2000: 263, 274, Olausson 2009: 421). Hence, media has a tendency of 'simplifying' complex issues and making "hypothesis into certainties", in order to make a story more interesting for its audience (Weingart, Engels and Pansegrau 2000: 274, Jönsson 2011: 123). Secondly, this is further influenced by journalistic constraints – e.g. deadlines, space considerations in article/column – as well as media's tendency to formulate climate change as something dangerous, in order to evoke fear in its' readers (Boykoff 2007: 483, O'Neill and Nicholson-Cole 2009: 358). Thirdly, media tends to not speak of climate change risks in the terms of *risks*, but rather as *hazards* or *catastrophes* (M. Boholm 2008, 2009: 5). This last point could obviously be seen as problematic for this study, as this study intends to examine climate change risks. However, identifying risks can be done in other ways than localizing the explicit word 'risk'. As have been described in the previous section on risks, risk refer to something that is anticipated to happen in the future. Thus, it is argued that a climate change risk can be identified for this study by combining the already made definition of *climate change risk* along with a theoretical risk framework and a methodological approach of identifying climate change risks. Thus, a risk framework and a methodological approach of identifying risks will be elaborated on later in this thesis.

4.2.2: Media influence

A way of exploring media's influence on the public was made by McCombs and Shaw, who examined how media is shaping media recipients' opinions, interpretations of a phenomenon and in telling recipients what to think about (McCombs and Shaw 1972: 177). They argue that based on media's information, positioning and the importance given to certain issues (both in a qualitative and quantitative measure), media recipients and the public learn not only about the issue in general, but also how they should feel about the issue, how 'important' the issue is in general, as well as what details of the issue that are more important than others (ibid: 176-177). Thus, in accordance with this argument and the discussion on the production of media above, it could be argued that the 'truth' of an issue that is being constructed by media, also becomes the truth of the issue for media recipients and a large proportion of the public. This is also argued to be the case concerning climate change, in which media coverage of climate change issues generate an increase for public concern with the issue and has influence on the political agenda. Either through affecting politicians directly or by influencing

the public whose concerns for issues affects political decisions (Sampei and Aoyagi-Usui 2009: 203, Jönsson 2011: 121, Page and Shapiro 1983: 175). Thus, media communicating climate change risks, and other climate change issues, is essential for providing information and knowledge to the public, and for creating a fundamental basis upon which engagement and decision making can be made. Or, to paraphrase Beck, the consequences of climate change has to be presented, or a basis will not exist upon which pressure for action can be made (Beck 2009: 86).

According to Weaver (2007), there are two different approaches to examine agenda setting and media representation. Either by looking at a so called "first level" of agenda setting, in which *what* is covered is focused on, or through a "second level" agenda setting, in which *how* an issue is covered, such as framing[1], is focused on (142). Nevertheless, using a "second level" agenda setting does not necessarily mean that elements of a "first level" agenda setting approach have to be dismissed (ibid.). Therefore, this study considers a "second level" agenda setting approach appropriate, as it takes into consideration and show both *what* climate change risks that are being covered – as in what the relationship is between climate change and what is being threatened– as well as *how* climate change risks depicted – i.e. how they are framed to threaten something. Following this "second level" agenda approach for this study, the coming sections will define a risk framework as well as elaborate on framing theory.

4.3: Definition of risk framework

For this section, three different stages of the social construction of a risk will be laid out – *risk object, relationship of risk*, and *object at risk*. The framework is based on Boholm's and Corvellec's "A relational theory of risk" (2011) as well as Hiltgartner's "The Social Construction of Risk Objects" (1992). According to these authors and this study, risk is as a social construction in which the three stages helps to formulate when and why something is considered a risk, and is an adequate tool for analysing risk communication (Å. Boholm and Corvellec 2011: 176). An operationalization of the stages will be made later on in the methodological chapter.

4.3.1: Risk object

Hilgartner describes *risk objects* as something "that are deemed to be the sources of danger", or "that pose hazards, the source of danger" (Hilgartner 1992: 40-41), while Boholm and Corvellec refers to it as "something that is identified as dangerous" (Å. Boholm and Corvellec 2011: 179). The term *risk object* originates from a constructive nature in which it denotes an *object* being produced within a social context, as well as this object being defined as *risky* (Hilgartner 1992: 42).

[1] Framing will be elaborated on page 23

A *risk object* can be constructed by several different aspects, ranging from very concrete to very abstract, such as manufactured products, situations, behaviour etc. (Hilgartner 1992: 40, Å. Boholm and Corvellec 2011: 179). It is an innovative performance to create a *risk object*, in which risks are introduced into a social sphere where multiple different objects can be identified and defined as the *risk object* for one area of interest (Å. Boholm and Corvellec 2011: 179, Hilgartner 1992: 46). For instance, Hilgartner (1992) states that within the auto-based transport sphere, *risk objects* can range from the driver itself, to domestic dependence on foreign oil, understaffed trauma centres etc., or a combination of all of these (46). This last statement, that a *risk object* can be a combination of several components, is an important one to make in a climate change context, as climate change is often not the sole variable for a risk to be constituted (as mentioned in 4.1.3: Climate change risk). However, the condition or limitation for a *risk object* to be constituted, is that the innovative art of constructing a *risk object* must be founded and depend "on conditions of possibility in the natural and social world" (Å. Boholm and Corvellec 2011: 179). Nevertheless, once a *risk object* has been established, "it enjoys a certain independence from its context of creation" (ibid.), letting it be fluid rather than static, leaving it open for new interpretations "and to a corresponding range of risk-related uses" (ibid: 179-180).

4.3.2: Relationship of risk

In order for the *risk object* to pose a risk towards the *object at risk*, there has to be a connection between these two. Hilgartner calls this connection a *linkage* (Hilgartner 1992: 40) while Boholm and Corvellec defines it as the r*elationship of risk* (Å. Boholm and Corvellec 2011: 180). The latter concept will be used in this study as it has been elaborated on to a larger extent in previous literature. For this study, *relationship of risk* operates, firstly, as a formulation referring to that there has to be a relationship, a connection, between what is threatening – the *risk object* - and what is being threatened – the *object at risk* (ibid.); and secondly, *relationship of risk* also operates as a concept in which the *relationship of risk* can be identified as being constituted by something, e.g. 'a storm'.

There are some criteria's and constraints to what can make a *relationship of risk*. Firstly, relationships between *risk objects* and *objects at risk* are not simply occurring, they are hypothetical of what could happen under certain unhoped for circumstances. Remember, just like a risk per se is a potential occurrence that *could* occur, so are also *relationships of risk* (ibid: 181). For instance, in a climate change context, the *risk object* 'climate change' could hypothetically threaten someone – the *object at risk* – to get skin cancer, through the *relationship of risk* of more extensive sun radiation. Secondly, a *relationship of risk* can only exist if it has been established how, and possibly why, the *risk object* constitutes a threat towards the *object at risk* (ibid.). In a climate change context, this establishment is convenient as it has been established by scientific evidence, which serves a privileged position when assigning risks (ibid.). Lastly, *relationships of risk* are also obliged by a rule of engagement. This means

that if a *relationship of risk* is established between a *risk object* and an *object at risk*, it has to be followed by an action or a will to act (ibid.). For instance, if Gothenburg is at threat from climate change, through the relationship of rising sea levels, the rising sea levels will be seen as a *relationship of risk*, as actions most likely will be made to save Gothenburg.

4.3.3: Object at risk

The *risk object* constitutes, through the *relationship of risk*, a threat to what Hilgartner calls a "putative *harm*" (emphasis in original) (Hilgartner 1992: 40), and to what Boholm and Corvellec calls an *object at risk* (Å. Boholm and Corvellec 2011: 180). For this study, I will apply the latter concept mentioned as it has been elaborated on to a greater extent in previous literature. Thus, an *object at risk* is something that is considered to be of value (ibid.). *Value* in this context, is not to be considered a value of moral principles but rather refers to "the related but broader notion of something that is held to be of worth, be it life, nature, principles, or a state of affairs", and which also can be measured in terms of monetary value (ibid). Further, an *object at risk* is not to be identified as something that is simply 'in danger'. Instead, that 'something' has to be seen as something that have the features of being valuable, vulnerable and in need for protection (ibid.). Thus, when assigning something as an *object at risk*, it is a performance of assigning it as being valuable, addressing it as something that should withstand and "deserves attention and care" (ibid.). For instance, if someone was to make realistic plans for smacking the life out of a specific mosquito, the mosquito in question would clearly be considered at danger. Yet, it is the strong belief of the author that most people would not assign any value to this particular mosquito's life, hence, not addressing that this mosquito's life must withstand. Therefore, even if this mosquito would be considered to be at danger, it would not be considered an *object at risk*. However, if someone was to makes similar plans to smack the living life out of a prime minister of any nation-state on this planet earth. This particular prime minister would not only be in danger, but many would probably also consider that the prime minister's life is something worth protecting, a valuable life that should withstand. Thus, the prime minister would be considered an *object at risk*. Lastly, it should be mentioned that just like a *risk object*, an established *object at risk* is always fluid. It can be interpreted in many ways and in different contexts, and the value it entails could be considered to not be of value in another context or in the future, or its current value could transform to be of value in another sense over time or space (ibid.).

Thus, now as the three stages of the social construction of risk have been formulated, the schematic formulation of these three stages is described by Boholm and Corvellec as:

[Risk object] ← (Relationship of risk) → [Object at risk]

Figure 1 – relational theory of risk (Å. Boholm and Corvellec 2011: 179)

For this study, *objects at risk* will be identified and categorized through frames. Hence, in the next section, framing theory will be elaborated on in order to understand the theoretical background and meaning of framing and frames.

4.4: Framing theory

In this section, framing as a theory and approach will be elaborated on; then the next section will elaborate on the emotional response to the *public health frame*, which will be used in this study; and later on, the methodology chapter will elaborate on why the *public health frame* and the other frames were chosen for this study, as well as how they will be identified in the articles to be reviewed.

Framing theory is a broad approach that has been applied in multiple numbers of scientific disciplines and literature (Hart 2010: 4, Nisbet 2009: 15). According to Entman, to frame something is:

> "to *select some aspects of a perceived reality and make them more salient*[2] *in a communication text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation* for the item described" (emphasis in original) (Entman 1993: 52).

Myers et al. (2012) definition of framing also points to a selective emphasis on certain aspects of an issue, and notes that framing theory is applicable when doing research on communication, as this study intends (1106). Another note to be made regarding framing theory, is that while "[first level] agenda-setting theory mainly focuses on which issues are reported, framing is about *how* issues are reported" (Jönsson 2011: 122, see also: Semetko and Valkenburg 2000: 93-94). Thus, this study's approach of using a "second level" agenda setting theory (as mentioned in 4.2.2: Media influence) consents with using framing theory as an approach. Continuing from the concept of *framing* to the concept of a concrete *frame,* a frame could be viewed "as an *organizing idea that provides meaning"* (emphasis in original) (Olausson 2009: 423). More specifically in news media, a frame could be seen as a "cognitive window" that provides a meaning to the article, or as a tool through which individuals "interpret and evaluate information" (ibid, Semetko 2000: 94). Thus, a frame provides a meaning for an article as well as a meaning of the information in the article for the consumer of it. This last point is an important one for this study, as it states, firstly, that frames is part of a production of an ideological and hegemonic power (Olausson 2009: 423). This means that frames in a way is a production and reproduction of the will, norms and structures of the current power structure (as argued in 4.2.1: Production of media content and climate change risks). Secondly, it also means that different frames can have major impact on recipients' perceptions of risk (Semetko and Valkenburg 2000: 94). For instance, research has found

[2] Entman defines *salient* as "making a piece of information more noticeable, meaningful, or memorable to audiences" (Entman 1993: 53)

that frames triggers a certain way of thinking around an issue, why and how the issue might constitute a problem as well as what should be done about it and by whom. This in turn contributes to shape the public perception of that issue (Nisbet 2009: 15, Semetko and Valkenburg 2000: 94).

Thus, in accordance with this study's approach of "second level" agenda setting, while this study partly intends to identify and compare *what* climate change risks that have been communicated, applying framing theory to the study also provides a discursive analytical tool within "second level" agenda setting that looks at *how* the issue of climate change risks have been represented by media. The approach of "second level" agenda setting is further used to analyse the emotional response from media's representation of climate change risks, which will be elaborated on in the next section.

4.5: Emotional response to climate change communication

This section will, firstly, elaborate on why communicating content that evoke emotions is relevant; secondly, it will provide an analytical framework on the emotional response to the communication of the *public health frame* as well as the emotional response to risks being situated in different spatial/geographical spaces and distances. This analytical framework is used to examine what impact media representation of climate change risks can have on media recipients of such representation.

4.5.1: Relevance of emotions

Emotions are regarded as being shaped by a link between a person's affection and cognitive components, meaning that it is a socio-cultural construct of a person's experiences, culture etc., including socio-cultural construction of emotions like love, anxiety and empathy (Höijer 2010: 3). Emotions and emotional response to communication have in recent research been interlinked with positive results for people to make moral decisions (ibid: 4, Roeser 2012: 1034), in which an emotional response to information about climate change and its impacts can serve for a greater desire to intervene in the issue (ibid: 1038). Firstly, it can do so by motivating us to adapt our own behaviour into being more environmentally friendly (ibid: 1038, 1039). Secondly, studies have shown that individuals "often rely on their emotional response to an issue to guide their opinion toward the enactment of related policies", thus emotions being an important factor for policy support (Hart 2010: 5). Hence, if news media communicates climate change risks in a way that has the potential to increase the emotional response among their readers, this could also be argued to increase the readers' willingness take action on the climate change issue, both on an individual level and on a political policy supporting level. For this study, two components that have been found to play an important role for the emotional response in climate change communication, will be examined – the *public health frame* and the situating of climate change risks.

4.5.2: The public health frame and its' emotional response

The 'frame' used in communicating a message has been shown to have important consequences in terms of how people perceive the problem of an issue as well as what should be done about it (Myers et al. 2012: 1106). Historically, climate change has been largely framed as an environmental issue and problem, often perceived as an issue not relevant to individuals' lives or their local surroundings, thus not invoking a will to engage in the issue of climate change (ibid, Maibach et al. 2010: 2). Research has instead found that a frame that highlights climate change's consequences to public health might serve better to create an interest among the public for climate change (ibid: 1). This frame highlights that climate change can increase allergies, infectious diseases and other health problems, both among poor and rich people and nations (Nisbet 2009: 22). Hence, it has been found that this frame generates a positive emotional response, in terms of generating a greater feeling of hope among recipients than any other frame (Myers et al. 2012: 1107). Such emotional response has in turn been found to be consistent with increased support for public engagement, climate change mitigating and adapting strategies (ibid: 1105, 1109, Maibach et al. 2010:1). Thus, by examining the *public health frame*, this study will gain a perspective on if, and to what extent, climate change risks are represented by media in a manner that can evoke a positive emotional response among the recipients of media representation.

One of the reasons for making the *public health frame* consistent with a greater emotional response is that it often shifts the geographical focus from a distant risk to a risk that is situated within a relevant proximity of the receiver of the message (Nisbet 2009: 22). Thus, in the next section the spatial/geographical space and distance and its impact on the emotional response, will be elaborated upon.

4.5.3: Spatial situating of climate change risks and its' emotional response

By examining the spatial situating of climate change risks, meaning *where* they are situated, previous research can contribute to analyse the effects on media recipients' emotional response and engagement for climate change. Further, it can provide an insight to how 'global' or 'local' Swedish newspapers are in their representation of climate change risks.

Regarding the spatial distance's impact on people, Weber (2006) found that personal experience of climate change risks had a big impact on individuals' risk evaluation (103). However, not only personal experience, but also a risk described to possibly impact the geographical locality of an individual, has been argued to have a larger impact on that individual than a risk described to occur in another geographical locality. For instance, Lorenzoni, Nicholson-Cole and Whitmarsh (2007) found that "situating climate change in terms of an individual's present locality will render the issue […] more likely to promote emotional and cognitive engagement with the issue" (as cited in Spence and Pidgeon

2010: 657, see also: Myers et al. 2012: 1110). On the contrary, Meijinders et al. (2001) found that "'the farther away in […] space people think a threat is, […], the less involved they are'" (as cited in Roeser 2012: 1034) . Further, Rayner and Malone (1997) suggests that highlighting local climate change impacts makes it more likely that people will act sustainably (as cited in Spence and Pidgeon 2010: 657). However, if 'locality' is in terms of a country, region, city, street or anything else is not specified, and is probably also difficult to specify as public risk perception depends on many factors, including psychological attributes, social context etc. (Brody et al. 2007: 75). Nevertheless, for this study 'locality' will be defined as the spatial/geographical space of Sweden, as the newspapers to be reviewed are 'national', being the most read throughout Sweden and having the means to report on both local, national and international stories (more on the newspapers ought to be reviewed in the Methodology-chapter). Hence, if a risk is described to be anticipated to occur in the spatial/geographical space of Sweden, this would indicate that this risk is more likely to promote an emotional response and will to engage with the issue of climate change among media recipients, than a risk described to be anticipated outside of Sweden.

The next chapter will explain the methodological approach and method used in this study. The methodological chapter is partly be based on the theoretical framework and will elaborate on how climate change risks, frames and spatial distances have been identified in the news articles reviewed.

Chapter 5: Methodology

As this study intends to review risks from two different years, an approach is needed to collect and review data in a manner that allows for a comparative analysis of *what* and *how* climate change risks are constituted. This would allow for drawing conclusions on media representation of risks in accordance with the "second level" agenda approach. It is argued that the best way of attaining such information is by collecting large amounts of empiric material which then can be analysed in both a quantitative and a qualitative manner. Thus, the author finds that a mixed content analysis is the most suitable approach for this study, as it is a highly flexible method that can, firstly, be used to make comparisons between large amounts of text from different periods of time (White and Marsh 2006: 23); and secondly, is valid for reviewing and coding certain themes, such as frames, that might be latent in the text (Bryman 2012: 297, White and Marsh 2006: 27, see also: Bergström and Boréus 2012: 52).

5.1: Design and method: mixed content analysis

Content analysis is applicable when following the basic structure of communication, including a sender – the newspaper and/or journalist, and a message – climate change risk. The goal of content analysis and other communication research approaches have traditionally often been collecting notions of easily identified aspects within a text, often referred to as the *manifest content* (White and Marsh 2006: 22-23). To quote Krippendorff (2004), content analysis can be defined as "a research technique for making replicable and valid inferences (or other meaningful matter) to the contexts of their use" (as cited in White and Marsch 2006: 23, 27). To apply this quote to this study, the 'inferences', or conclusions, are drawn from the texts in the articles to be reviewed and coded. These 'inferences' are then analysed using the analytical framework of this study and put into the context of media representation of climate change risks.

The mixed content analysis approach used for this study includes two approaches. First, it includes a qualitative content analysis approach – Ethnographic content analysis (henceforth: ECA), In general, *ethnography* is referring to "the description of people and their culture" (Altheide 1987: 66). However, from a methodological point of view, it is to be considered as a "methodological orientation independently of a specific matter", meaning that it is a methodological approach of a reflexive nature rather than static (ibid.). Thus, ECA as a method can be defined as "the reflexive analysis of documents" (ibid: 65), in which this study will use ECA to possibly develop new *object at risk-frames,* if those who have been deductively developed (see: 5.3.2: object at risk – deductive frames and generating of frames) are not found satisfactory. Further, ECA will be used as a tool for sampling the material ought to be reviewed and analysed. To continue, secondly, this study also includes tools used in quantitative content analysis. The ECA and quantitative content analysis tools will be elaborated on further below.

The mixed content analysis for this study includes the following steps:

i. Selection: determining the data to be reviewed and the sampling of material to be reviewed

ii. Developing a coding schedule in order to know what to note in the material to be collected, as well as a coding manual, or systematic process, for making the evaluation of what to code as what in the coding schedule

iii. The actual process of collecting and coding the material

(Bergström and Boréus 2012: 54-55, White and Marsh 2006: 30-34 see also: Bryman 2012: 293-294, 298-299).

After these steps have addressed, the results from the data collection are analysed, which will done in Chapter 6 in this study. First, however, the steps of the mixed content analysis will be elaborated on below in the order mentioned.

5.2: **i**. Selection: data and sampling

This section will elaborate on how to identify the data to be reviewed, coded and analysed. Following the argument that has been so far in this thesis, articles concerning climate change risks published in Swedish newspapers, are valid and essential for answering my research questions. Thus, the texts from these news articles are argued to be valid as material for this study and will therefore work as "the documentary container for the data collection unit and/or units of analysis", also called the *sampling unit* (White and Marsh 2006: 29). Within the *sampling unit* – texts in articles published in Swedish newspapers – are the units that will be reviewed, coded and analysed (ibid.). In order to identify these units in accordance with answering my research questions, an elaboration on the chosen newspapers, years and search word will now be made.

The newspapers selected for reviewing are *Dagens nyheter, Aftonbladet, Expressen, Svenska Dagbladet* and *Göteborgsposten.* These newspapers have been chosen on the argument of being the most influential newspapers in Sweden, in which they have the most readers of all the newspapers and are read outside of the cities they are being published; hence, being representative by reaching out to a large part of the Swedish population (Jönsson 2011: 124, Olausson 2010: 142, Rogberg 2014). Further, choosing this relatively large number of newspapers can also provide a variation in the material to be reviewed, as different newspapers might have different standpoints or perspectives on climate change risks (Olausson 2010: 142). Also, due to the large circulation of these newspapers, it is argued that they influence smaller newsrooms across Sweden, hence, influencing the discourse on climate change on multiple newsrooms in Sweden (Boykoff 2007: 480).

When choosing the years to be reviewed, I intend to review years in which the topic 'climate change' was given a large amount of attention, in order to acquire sufficiently with data. Further, as the research used in this study, that have examined media recipients emotional response to *how* media represents climate change risks, to a large extent have been published between 2010 and 2012, it is my intention to examine years before and after these years. Thus, to examine years before and after the research for my analytical framework was published. Hence, the years for reviewing – 2009 and 2015 – were chosen on these premises. In 2009 and 2015, two major climate change summits were held – COP15 in Copenhagen in 2009 and COP21 in Paris in 2015. The COP15 intended to create an agreement on how to limit the maximum global average temperature and was one of the biggest world leader meetings ever outside of United Nations headquarters (United Nations 2016). COP21 in Paris also gathered a lot of world leaders and had the intention to form a legally binding agreement on the climate on a universal level ("UNFCCC COP 21 Paris France - 2015 Paris Climate Conference" 2016).These two events were two of the major climate summits that have been held in the last few decades, and were held in years that are within a timespan that I find suitable for this study. Choosing years in which major climate summits were held also have the advantage of generating more media attention to climate change (Schäfer, Ivanova and Schmidt 2013, Boykoff 2007: 480). Hence, reviewing articles from 2009 and 2015 should provide me with more material to review and analyse than years when no major climate summits were held. However, only the second half of each year – 1st of June to 31st of December – will be reviewed as the amount of articles generated for the whole of 2009 and 2015 is too substantial for reviewing within the time limit of this study. Further, the first half of each year is also argued to not be within a close temporal distance to the climate summits mentioned above, as they were held in December. To note is that these second halves of 2009 and 2015 will be referred to as merely '2009' or '2015' for the remainder of this study.

Regarding what articles to code and analyse in the years chosen, they will be identified through the search word *climate change.* The search word is argued to be relevant for this study as articles concerning climate change risks should respond to the chosen search word. Further, *climate change* have been chosen for several reasons instead of other search words that could generate content on climate change risks, e.g. *global warming*. Firstly, *climate change* generates more articles in the chosen years to be reviewed, than the search word *global warming,* thus providing me with more data. Secondly, the concept of climate change is also commonly used among major actors. For instance, IPCC uses it both in the panel's name as well as on their assessment reports (see e.g. IPCC 2014, IPCC 2007), and the concept of climate change is also the official concept used within the United Nations Framework Convention on Climate Change (UNFCCC 1992). However, it is highly possible that the search word *climate change* can exclude articles that could be valid for reviewing and analysing, such

as articles responding to the already mentioned concept of *global warming*. Nevertheless, as this study intends to review climate change risks, as well as the study having a time limit that will not allow for a more extensive data collection, it is argued that only using the search word *climate change* is both valid for the study as well as sufficient in the amount of articles that will be generated for reviewing. Thus, the concrete search word that will be applied will be the Swedish word: "klimatförändring****" (climate change****). The jokers (*) are added on in order to respond to possible grammatical changes of the search word, such as "klimatförändringar" or "klimatförändringarna" (climate changes, the climate changes). The actual search will be conducted in the Swedish media archives (*mediearkivet)* which contains pdf-files of original printed newspaper articles ("Mediearkivet – Retriever" 2016). These articles are available legally and for free for me as a student at Gothenburg university, hence, the data used in this study is argued to not be collected in any unethical manner (Creswell 2009: 91).

To conclude, the newspapers of *Dagens nyheter, Aftonbladet, Expressen, Svenska Dagbladet* and *Göteborgsposten,* the years of 2009 and 2015, and the search word *climate change****; have narrowed down to which articles to be reviewed, coded and analysed. The next section will operationalize the coding schedule and coding manual for this study.

5.3: **ii**. Coding Schedule and Coding manual

In this section, a combination of a coding schedule and coding manual will be operationalized. As this study intends to identify the components of the relational theory of risk (*risk object – relationship of risk – object at risk*), they are a part of the coding schedule and will all have to be identified in each and every article in order for that article to be coded as communicating a climate change risk. While the *risk object* will be permanent (explained below), the *relationship of risk* and *object at risk* only make up for a half of the coding schedule for coding them. Hence, there is also a need to develop the different sort of categories that different *relationship of risks* and *object at risks* can fit into, along with a coding manual for identifying these different sorts of *relationship of risk-categories* and *object at risk-frames*. After this procedure has been addressed, the coding schedule and manual for the spatial situating of climate change risks will be operationalized.

5.3.1: Risk object and Relationship of risk-categories

Concerning the *risk object*, it will in this study be permanently be assigned as 'climate change'. Hence, climate change is permanently defined as the source of danger, and that poses a danger, in accordance with the definition of the *risk object* (in 4.3.1: risk object). Other studies have argued to use a different approach, in which *risk objects* are interpreted after what news articles states constitutes the risk, for instance 'flooding' (e.g. Krippendorf 2004, Buurman 2013). However, I argue that my approach is favourable for two reasons. Firstly, as this study intends to review climate change risks, and that will

be identified through the search word 'climate change', the premise for each article to be reviewed is just that climate change is identified to be fully or partly the source of danger. Thus, I argue it is logical to assign climate change as the *risk object*. Secondly, while Buurman (2013) allows 'flooding', 'landslides' and other natural disasters or phenomenon be the *risk object*, these are to be coded within the *relationship of risk-categories* of this study. Although I do not argue that Buurman's approach is wrong, it is argued that his approach, which involves coding up to five separate categories in one article (see: Buurman 2013: 28), can create several complications for the reliability and possibility of replicating such a study. With my approach, it is argued that the probability of performing such mistakes are considerably less likely. Further, having to code less categories also provides more time to review more articles. Hence, once an article concretely articulates that climate change fully or partly constitutes a risk, climate change can be coded as the *risk object* and the article will be considered valid for further scrutinizing in order to possibly identify a *relationship of risk* and *object at risk*, i.e. the full spectrum of a climate change risk.

As climate change means long term changes in the weather ("NASA – What's the Difference Between Weather and Climate?" 2016), such changes are accordingly what constitutes the *relationship of risk*, between the *risk object* (climate change) and the *object at risk*. To note is, however, that such changes can either be constituted as being a direct effect of climate change (e.g. 'increasing temperature') or an indirect effect of climate change (e.g. increasing temperatures leading to melting ices leading to 'rising sea levels'), in accordance with the climate change indicators developed by the United States Environmental Protection Agency (henceforth: EPA) and the Swedish Meteorological and Hydrological Institute (henceforth: SMHI). Thus, these climate change indicators developed by the EPA and SMHI are argued to also be valid as *relationship of risk-categories*, and will therefore be applied in this study's coding schedule. Hence, the climate change indicators and *relationship of risk-categories* are:

- Precipitation
- Temperature and sun radiation
- Vegetation period
- Wind
- Snow and ice
- Ocean and sea level, rivers and lakes
- Extreme weather
- Climate change/no specific relationship communicated

("Klimatindikatorer | SMHI 2011", "U.S. Environmental Protection Agency, 2014")

The category *Precipitation* is coded when a relationship between the *risk object* (climate change) and the *object at risk* is constituted as being due to changes in rainfall or snowfall. To be noted is that news articles that speak of flooding as the relationship is also coded as *Precipitation,* unless another category is specifically mentioned to be the cause of the flooding. E.g. if rising sea levels is mentioned to be the cause of a flooding, it will be coded as *Ocean and sea level, rivers and* lakes. *Temperature and sun radiation* is coded when a relationship between the *risk object* and the *object at risk* is constituted as being due to changes in the temperature or amount of sun. Drought is also to be coded within this category, unless another category (e.g. *Vegetation period)* is specifically mentioned to be the cause of the drought. *Vegetation period* is coded when a relationship between the *risk object* and the *object at risk* is constituted as being due to changes in seasonal changes, changes in blooming etc. *Wind* is coded when a relationship between the *risk object* and the *object at risk* is constituted as being due to changes in the wind (e.g. storms). *Snow and ice* is coded when a relationship between the *risk object* and the *object at risk* is constituted as being due to changes in the snow coverage, snow depth, ice coverage of ice sheets or lakes, changes in glaciers etc. To note is that snowfall is not included in this category as it is coded as *precipitation. Ocean and sea level, river and lakes* is coded when a relationship between the *risk object* and the *object at risk* is constituted as being due to changes in the heat and/or temperature of oceans, rivers, lakes or other water flows, and in changing levels of the oceans, rivers or lakes etc. *Extreme weather* is coded when a relationship between the *risk object* and the *object at risk* is constituted as being due to extreme weather but not specified in what sort of changes in the weather this entails. Lastly, if no *relationship of risk* is specified in the article, but there is a statement that *climate change* threatens an *object at risk*, *climate change* will be coded as the relationship of the risk, thus being coded as both the *risk object* and the *relationship of risk*.

To be noted is that several *relationship of risk-categories* can be identified in a single article, for instance if 'strong winds' and 'increased precipitation' is said to constitute a threat towards an *object at risk.* Further, certain articles may imply that pollution, acidity etc. is the relationship between the *risk object* (climate change) and an *object at risk*. However, as pollution and acidity are not caused by climate change but rather drivers of climate change or side effects of processes and actions that may also contribute to climate change, articles incorrectly stating pollution etc. as the *relationship of risk*, will not be coded as such.

5.3.2: Object at risk - deductive frames and generating of frames

Previous research has been limited in categorizing *objects at risk*, in relation to climate change risks interpreted in news articles. Nevertheless, Boholm (2008, 2009) made such a categorization and formulated categorizes such as 'water and water quality'*, '*animals', 'infrastructure' etc. for a total of twelve different categories; and Buurman (2013) was later influenced by this in his categorization of

objects at risk but in which he made few adjustments in order to fit his study. Such categorization for *objects at risk* could be applied to this study. However, Boholm's and Buurman's framework has been applied in a small number of studies and no research has been found which analyse this framework's categories. Thus, there is no base from which the results from using these categories could be analysed. Further, the relatively large amount of categories in this framework (12 in total) come with a fear that coding each and every *object at risk* into the 'correct' category might be difficult. Therefore, in order to make up for this lack of how to analyse the results, as well as the relatively large number of categories; this study will use framing theory, or more specifically *frames,* for categorizing the *objects at risk*. *Framing* has been elaborated upon earlier in the theoretical framework-chapter. However, in this section, an elaboration and operationalization of the frames used will be made. In general, frames have in a climate change communication context been researched upon to a much larger degree than the categories formulated by Boholm, and are therefore argued to be of satisfying analytical relevance for this study.

Matthes and Kohring (2008) identifies five common methodological approaches for generating media frames for content analysis (258). Four of these approaches generate frames inductively, meaning that the frames are produced and identified while collecting data (ibid: 262). However, as studies regarding media frames on climate change have been conducted before (see Chapter 3: Previous research) it is argued that a fully inductive approach is not necessary nor time efficient. Therefore, this study will partly build on the fifth (deductive) approach: frames already identified from previous studies. Thus, the generating of media frames for the coding schedule will partly be deductive, meaning a certain amount of frames have been derived from previous literature (ibid.). This approach of a seminal deductive generating of frames has previously been used by Semetko and Valkenburg (2000), but in which this study will complement deductive frames with a possible development of new frames by using tools from Ethnographic Content Analysis (as mentioned in 5.1: Design and method: mixed content analysis). Thus, an elaboration on the deductive frames as well as the methodology of the ECA approach is made below.

Nisbet (2009) developed several frames applicable for climate change, including frames of social progress, morality and ethics, public accountability and governance etc. (18). However, these frames were constructed for studying news media in the United States, in which the frames were constructed and defined in context of both less belief and concern of climate change, than in Sweden and Swedish news media (ibid: 14-15, see also: TNS political & social 2015). Further, Nisbet's frames were defined in a way which would allow both positive, negative and neutral stances (Nisbet 2009: 18), which would therefore not be applicable in this study as I intend to review and analyse climate change risks. Hence, in order to review and analyse frames concerning *objects at risks* related to climate change risks, this

study will apply frames developed and formulated by Hart and Feldman (2014). These frames were developed in order to review climate change impacts (330) but should nevertheless also be applicable and suitable for reviewing climate change risks. The frames consists of the *environmental frame*, *national security frame*, *economic frame* and the *public health frame* (ibid: 330-331). Each frame includes different aspects of what *object at risk*, that climate change might threaten. The definitions of the frames are based on the writings of Hart and Feldman (2014) as well as other scientific literature, as a way of clarifying the spectrum of risks that might be encountered and that also fit in to the frames. Historically, climate change has mainly been seen and framed as an environmental issue (Myers et al. 2012: 1106), in which the *environmental frame* includes stories that usually describes climate change risks as risks that threatens nature, ecology and ecological systems, animals etc. (Hart and Feldman 2014: 331, Myers et al. 2012: 1107). Worries over national security has come to the fore of climate change in recent years. In terms of framing, the *national security frame* consists of stories claiming that climate change risks may have impacts on national security, for instance: "by triggering violent conflict in vulnerable regions" (Hart and Feldman 2014: 331). It can also be recognized by the risks towards national-states as such, for instance in stories which focus on the risks towards islands being threatened by rising sea-levels (Barnett 2003: 7). Also, the *national security frame* can include stories in which benefits to the national security are acquired through mitigating and adaptive policies towards climate change. To provide an example: "policies addressing global climate change serve a national security function by reducing instability in marginal areas" (Hart and Feldman 2014: 331, Myers et al. 2012: 1107-1108). The third frame is the *economic frame*, including stories in which climate change risks threaten economic interests or that could have negative economic consequences on different actors, such as states or corporations (Hart and Feldman 2014: 331, Dirikx and Gelders 2010: 734, Semetko and Valkenburg 2000: 96). The last deductive frame is the *public health frame*, which partly have been elaborated on in the theoretical framework-chapter. This frame focus on the negative human health impacts that may be caused by climate change risks. Stories that uses a *public health frame* mainly concerns risks on human health, often with a focus on localized phenomenon, but in which global health concerns may also be addressed (Hart and Feldman 2013: 331, Myers et al. 2012: 1108). Such health issues may include diseases, allergies, nutrition or water shortages etc. (O'Neill and Nicholson-Cole 2009: 368).

As the deductive frames now have been depicted and defined, the task remains of knowing when and how to measure and code one and each of these frames. Thus, influenced by the writings of Semetko and Valkenburg (2000) as well as with the definitions of the frames above, a coding manual was developed. The manual for coding frames are based on a framework of a binary questions by Semetko and Valkenburg (2000), in which I as a researcher can only answer *yes* or *no* to each question in order

decide if the article being reviewed is framed in accordance with any of the frames examined (98). This binary approach is not only efficient in identifying frames but also provides an advantage in having high probability of high reliability and replicability of the study (ibid: 99). Following the approach of Semetko and Valkenburg, having three *yes/no*-questions for each frame, three questions were formulated for each frame in which at least *one* of the questions had to be answered *yes* in order for the article to be recognized as including that particular frame. Important to note is that the questions are formulated after the assumption that climate change has already been identified as the *risk* object, thus that a climate change risk might have been communicated. The coding manual for identifying frames was constructed accordingly:

Environmental frame

- Is there a mention of ecological losses in the future?
- Is there a mention of threat being constituted towards ecological systems, nature, animals, or Biosystems?
- Is there a reference of consequences on ecological systems etc. or consequences towards animals or other components in an ecosystem if pursuing or not pursuing a course of action?

National security frame

- Is there a mention of impact on the nation-state/national security, its' citizens, or conflict in the future?
- Is there a mention of threat being constituted towards a nation's security or territory/border as a whole or in a marginal area?
- Is there a reference to consequences towards the national security or territory/borders, if pursuing or not pursuing a course of action?

Economic frame

- Is there a mention of financial losses in the future?
- Is there a mention of the costs/degree of expense involved?
- Is there a reference to economic consequences if pursuing or not pursuing a course of action?

Public health frame

- Is there a mention of negative impacts on human or public health in the future?
- Is there a mention of threat being constituted towards individuals', or larger constitutions of individuals', food or water supply in either a localized or global context?

- Is there a reference to human or public health consequences if pursuing or not pursuing a course of action?

It has to be noted that there can be more than one frame identified per reviewed article. For instance, Barnett (2003) mentions that "the impacts of climate change will have financial costs, and in some cases these are sufficiently large to justify understanding climate change as a security issue" (9). Thus, an article formulated in such a manner could correspond to having both an *economic*- and *national security frame*.

As the deductive frames have been explained, I move on to explaining how new frames might emerge in the initial beginning of data collection and/or during the conduction of the data collection. As described above, tools within ECA will be used for this procedure if none of the deductive frames described above can be identified in an article. Further, ECA can be used as a way of transforming, recontextualizing or redefining existing frames, if they are not found sufficient in its current state (Altheide 1987: 67-68, White and Marsh 2006: 34). Thus, ECA is a proper approach for allowing new frames to emerge, or existing frames to disappear or transform during the study (Altheide 1987: 68), which is suitable for this study as new frames might have emerged in media representation between the two separate years ought to be examined. In accordance with Bryman's description of Altheide's generating of new categories (frames) within the ECA (Bryman 2012: 559, see also: Bergström and Boréus 2012: 55), the procedure for identification of possible new frames will be the following:

- Becoming familiar with 6-10 news articles. Half of the articles will be from 2009 and half of them will be from 2015, in order to possibly identify frames that could exist in either of the examined years.
- If new frames are identified in the process described above, add them to the coding schedule and coding manual.
- As the deductive frames and possible new frames have been developed, these will then "guide the collection of data and draft a schedule for collecting the data in terms of the generated categories" (Bryman 2012: 559)

The procedure described above will be used in the initial beginning of the study. However, as ECA is a tool that involves "*constant discovery* and *constant comparison"* (emphasis in original, Altheide 1987: 68), new frames might emerge over time as more and more news articles are reviewed and data collected.

What is presented in the following paragraphs in this section has been added after the data collection had taken place.

The outcome from the ECA procedure for generating new frames did not result in any new frames in the initial coding procedure. However, two new frames were identified during the data collection, being a *Culture frame* and a *Human existence frame*. The *culture frame* was generated as a response to articles describing climate change to constitute a risk towards culture, traditional lifestyles etc., attributes that were not responding to any of the questions of frame identification in the deductive frames. To note is that this frame has been coded when *media* refers explicitly to 'culture', 'traditions' etc. The *human existence frame* was generated as a response to articles describing climate change to constitute a threat towards 'humanity'. Thus, articles that described climate change risks to constitute a threat towards the human civilisation and that were not specific enough to respond to the frame questions of any of the deductive frames, were considered to be fitting into this frame. The binary questions for these two generated frames were formulated as:

Culture frame

- Is there a mention of losses to 'cultural' or 'traditional' ways of living in the future?
- Is there a mention of costs towards a 'culture' or 'traditional lifestyle'?
- Is there a reference of consequences to 'culture' or 'traditional' ways of living if pursuing or not pursuing a course of action?

Human existence frame

- Is there a mention of a threat towards the human race or humanity as a whole in the future?
- Is there a mention of costs to the human race or humanity as a whole involved?
- Is there a reference to consequences on the human race or humanity as a whole if pursuing or not pursuing a course of action?

To conclude the construction of *objects at risk-frames*, five deductive frames were formulated for this study – the *environmental frame*, the *national security frame*, the *economic frame* and the *public health frame*. Additionally, through the appliance of the ECA, the *culture frame* and the *human existence frame* were identified during the data collection and added to the coding schedule.

5.3.3: Spatial situating of climate change risks

In order to code the spatial situating of climate change risks, a framework developed by the author will be applied. In accordance with the theoretical framework, this study is concerning the spatial situating of climate change risks in order to examine if something or someone within the geographical domains of Sweden is at risk, or not. The coding schedule to answer this is formulated on the four different outcomes that may come from an article, which are:

- Risk expressed in news article to be constituted within Sweden's geographical domain

- Risk expressed in news article to be constituted outside of Sweden's geographical domain
- Risk expressed in news article to be constituted both inside and outside of Sweden's geographical domain
- Geographical domain of risk not expressed/not specified

No specific coding manual is considered needed to be formulated as categories in the coding schedule itself also works as a coding manual, clearly motivating when a risk will be coded in one or another category. However, it should be noted that while one article may include several *relationship of risk-categories* and/or *object at risk-frames*, the spatial situating of climate change risks will only be coded once per article.

5.4: **iii**. Process of collecting data

The data was collected during a two week period in accordance with the method described above. The news articles were reviewed in *mediearkivet* (the media archives) in order to examine if a climate change risk could be identified in each and every article. Regarding the data collection, it is important to note that the coding procedure varied from reviewing 20 articles from one year, before shifting to reviewing 20 articles from the other year, and so on. This was done as way of maintaining an adequate reliability during the data collection, as there was a possibility for me as a researcher to have done a systematic shift in how to interpret what material to code, as the coding procedure unfolded. Thus, when varying the reviewing of the news articles from 2009 and 2015, a possible shift in my interpretation of the coding procedure is argued to not have affected the reliability as a whole, since such a systematic shift would have affected the coding procedure similarly for both years examined (Bergström and Boréus 2012: 58). To continue, if a climate change risk was identified – i.e. the *risk object, relationship of risk(s)* and *object(s) at risk* – the article was imported to *Nvivo.* Nvivo is a software programme that has been essential for this study as it allows for marking, sorting and categorizing text. Hence, in Nvivo, the text in each and every article that denoted the *risk object*, *relationship of risk* and *object at risk*, was coded in terms of being marked and categorized in accordance with the coding schedule and coding manual described above. When all of the news articles had been reviewed and coded, the *risk objects*, *relationship of risk-categories* and *object at risk-frames* were compiled in windows excel in order to get a better overview of the data. The results and analysis of the data is presented in the following chapter.

Chapter 6: Results and analysis

In this chapter the results from the data collection will be presented and analysed. Firstly, by presenting and discussing the number of articles reviewed and coded, as well as the results concerning the *relationship of risk-categories* and *object at risk-frames.* Secondly, by presenting and discussing the emotional response to the *public health frame* and the spatial situating of climate change risks.

6.1: Climate change risks representation

This section presents the findings of the number of articles that were reviewed and coded, *relationship of risk-categories* as well as the *object at risk-frames.* The findings suggests that media representation of climate change risks in 2009 and 2015 have been rather similar. All *relationship of risk-categories* except one were coded in both years examined, and while two new *object at risk-frames* were generated during the data collection (described in 5.3.2: Object at risk – deductive frames and generating of frames), these two new frames were coded both in 2009 and 2015. Moreover, the percentage share each *relationship of risk-category* and each *object at risk-frame* constituted during each year, were not differencing significantly between the two years examined.

Table 1 shows both the number of articles that were reviewed and coded, in which 'reviewed' denotes the articles that were responding to the search word *climate change,* while articles that were 'coded' denotes that they were identified as communicating a or several climate change risks – i.e. *risk object, relationship of risk* and *object at risk.* The figures that follows from table 1 are based only on the articles that were coded.

6.1.1: Reviewed and coded climate change risks

In table 1 (below), the number of articles reviewed, coded and share of the articles reviewed that were coded, are presented.

	Articles reviewed	**Articles coded**	**Share coded/reviewed**
2009	457	106	0,232
2015	422	132	0,313
Total	879	238	0,271

Table 1 – Articles reviewed and coded

The table shows that from the year 2009, 457 articles were generated and reviewed. Out of these 457 articles were 106 articles identified as communicating one or several climate change risks (which includes the identification of the *risk object* 'climate change' – *relationship of risk – object at risk*), and were therefore coded. Thus, out of all reviewed articles from 2009, 23, 2 percent of them were coded and identified as communicating one or several climate change risks. Regarding the articles from 2015,

422 articles were generated and reviewed, from which 132 articles were identified and coded as communicating one or several climate change risks. Thus, 31, 3 percent of the articles reviewed from 2015 were coded. In total, 879 articles were reviewed in which 238 articles were also identified as communicating one or several climate change risks, hence, being coded. Thus, 27, 1 percent of all articles reviewed were coded and identified as communicating one or several climate change risks.

Despite that there were more articles generated for reviewing in 2009 than in 2015, there were more articles coded in 2015. Such results indicate that Swedish newspapers from 2009 to 2015 have improved at linking and communicating the full relational theory of risk (*risk object – relationship of risk – object at risk)*, i.e. what climate change constitutes a threat towards. However, it is important to note that even though the results show that the Swedish public have been more exposed to climate change risk communication from media in 2015 than in 2009, more extensive media coverage does not necessarily impact the public's attitude towards climate change (Leiserowtiz 2006).

6.1.2: Relationship of risk-categories

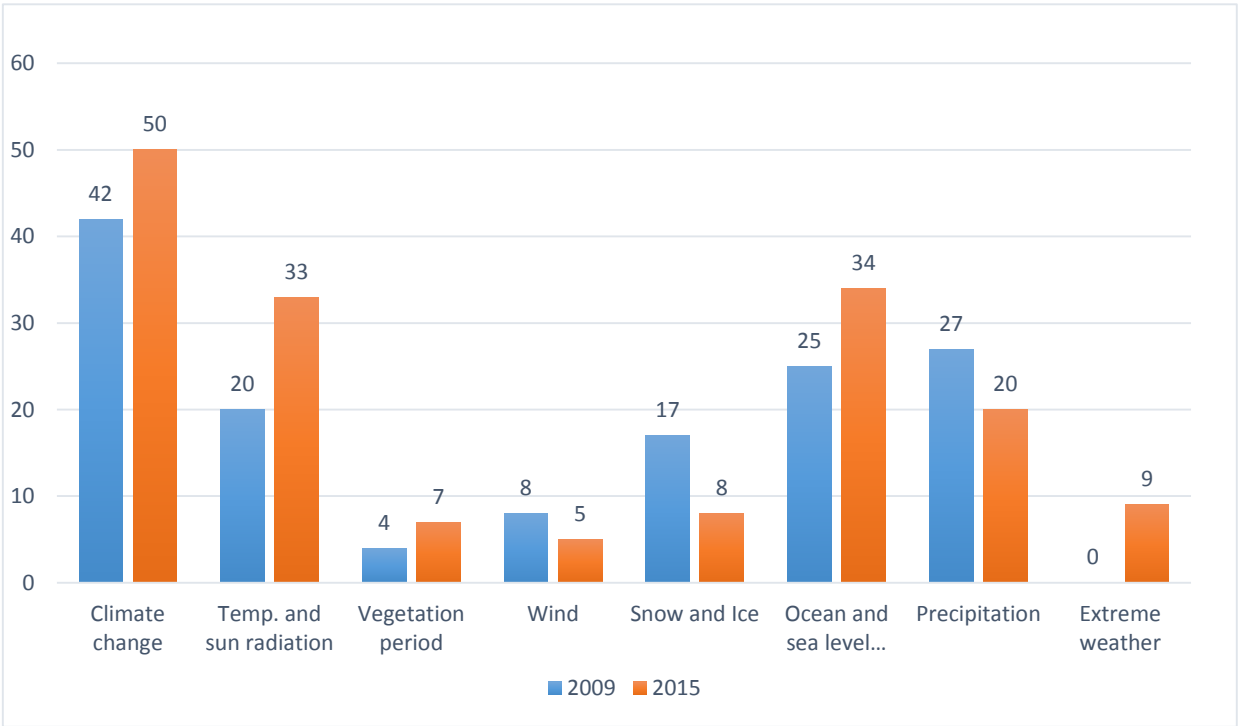

Figure 2 – occurrence of each relationship of risk-category

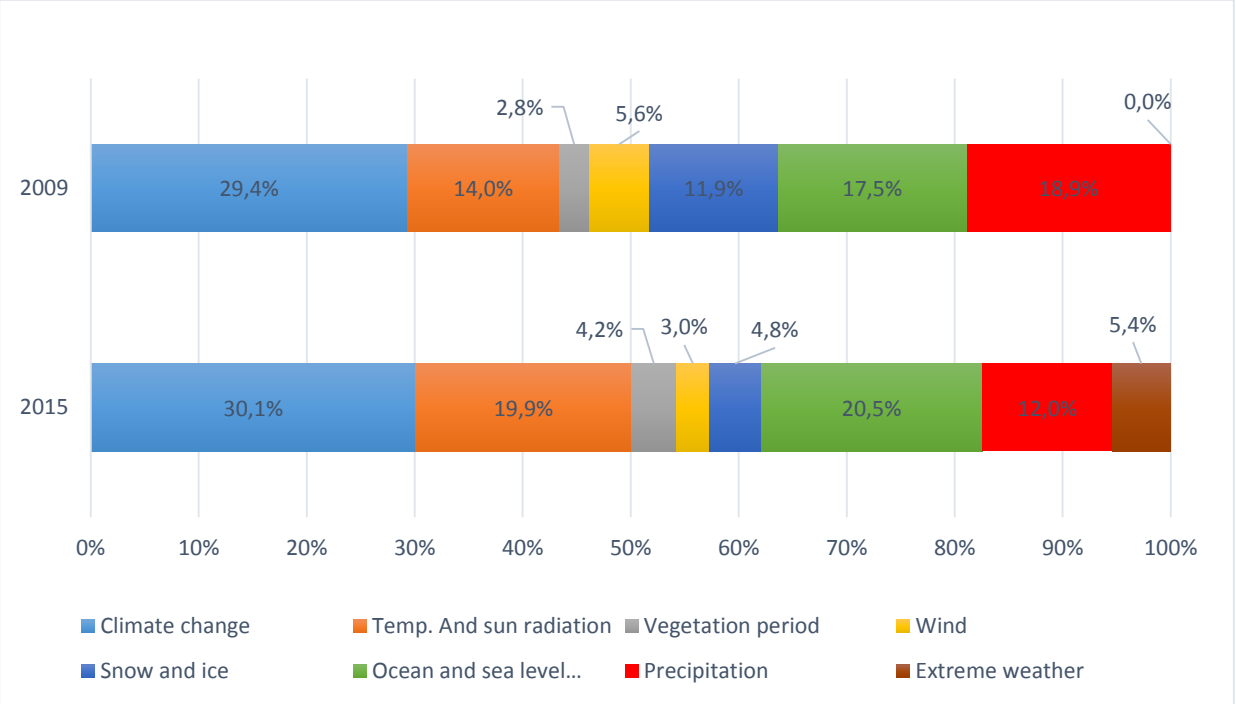

Figure 3 – percentage share for each relationship of risk-category

This section will present the number of occurrences for each *relationship of risk-category* as well as the percentage share each *relationship of risk-category* represented for each year (see: figure 2 and figure 3). An important note is that it during the data collection was possible to identify and code several *relationship of risk-categories* in a single article. Meaning that despite the total number of articles coded for 2009 being only 106 articles (see previous section), the total number of *relationship of risk-categories* coded in these articles from 2009 were 143. Further, what is presented in this section and the section concerning *object at risk-frames*, is the number of articles each category was coded in. This means that if the *relationship of risk-category* 'snow and ice' was coded twice in the same article, it still only counted as being coded once, as it is the number of articles each *relationship of risk-category* was coded in that are considered, and not the number of references made to each category.

One of the most striking results for the *relationship of risk-categories*, is that the category 'climate change' – meaning that no specific *relationship of risk-category* was identified – was the most present category both in 2009 and 2015, constituting about 30 percent of all *relationship of risk-categories* for both years. This indicates that while media communicates more climate change risks in 2015 than in 2009, media did a poor job in both 2009 and 2015 in specifying how climate change threatens the *object at risk*. However, the question emerges if constructing a climate change risk as such, communicating 'climate change' as both the *risk object* and *relationship of risk*, undermines the perception of the severity of a risk, by being rather non-specific; or, if it strengthens the perception of the risk when 'climate change' is represented as being the only factor – both *risk object* and *relationship of risk* – that constitutes a risk towards the *object at risk.*

The *relationship of risk-category* 'extreme weather' was the only category that was coded in one year (2015) but not in the other (2009). It could be argued that constructing and communicating a *relationship of risk* as "extreme weather" is being specific in an unspecific manner as 'extreme weather' does not specify what characteristic of the climate that have changed. For instance, it could imply heavy winds, flooding, drought or any other *relationship of risk-category,* or a combination of any of these. Media's tendency to simplify complex issues (as described in 4.2.1: Production of media content and climate change risks) here bids the question if the category 'extreme weather' helps strengthening the publics' belief that climate change actually will increase and enhance extreme variations of climate characteristics (NASA - "The Rising Cost of Natural Hazards: Feature Articles" 2016). Rather, such an unspecific specification could conceivably be argued to undermine the actual consequences of climate change, in which there is room for stating that 'extreme weather' is just random short termed occurrences rather than long term effects of a changing climate (Nature Publishing Group 2015). Nevertheless, it should be of interest for future research to examine why 'extreme weather' has emerged in news media as a way of describing the consequences of climate change, and the media logic behind it.

Besides from the *relationship of risk-category* 'extreme weather, three other categories increased rather extensively in 2015 compared to 2009, both in terms of occurrences and percentage share of the total amount of frames. Firstly, 'temperature and sun radiation' was applied by the examined newspapers 13 times more in 2015 than in 2009, also increasing by 5, 9 percentage points in the total percentage share between 2009 and 2015. Secondly, the *relationship of risk-category* 'ocean and sea level, rivers and lakes' increased, being applied 9 more times in 2015 compared to 2009 and also increasing by three percentage points in the total percentage share. Lastly, the *relationship of risk-category* 'vegetation period' also increased in both occurrences and percentage share. Nevertheless, this frame was rarely identified in either year, likely due to media representation specifying shifts in vegetation periods in terms of, for instance, 'increased rain' or 'severe droughts'. Thus, such media formulations has instead been coded to *relationship of risk-categories* as 'precipitation', 'temperature and sun radiation' etc.

Another interesting observation can be made regarding the *relationship of risk-category* 'snow and ice' which was identified to have been communicated more than twice as many times in 2009 than in 2015, making up for 11, 9 percent of all *relationship of risk-categories* in 2009 and only 4, 8 percent in 2015. Thus, this category has actually decreased in both number of occurrences as well as in percentage share of the total categories identified. The categories 'precipitation' and 'wind' has also decreased in 2015 compared to 2009, both in terms of occurrences and percentage share of the total amount of

relationship of risk-categories. However, they have not decreased to the same extent as the category 'snow and ice'.

6.1.3: Object at risk-frames

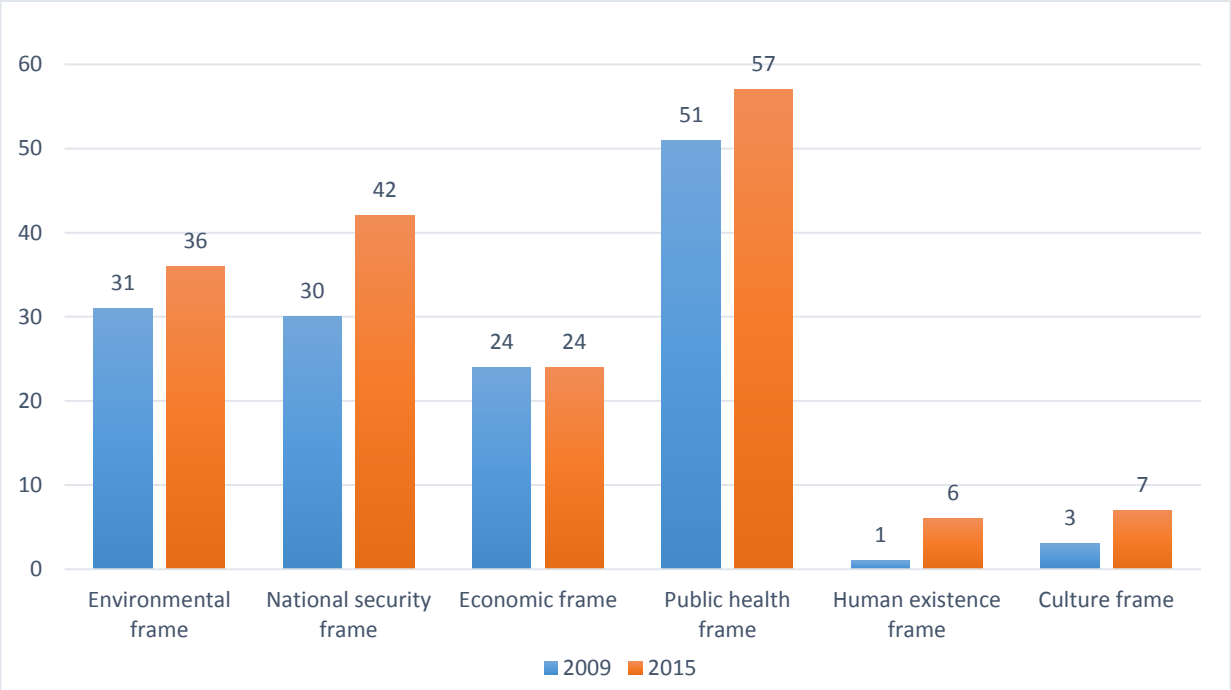

Figure 4 – occurrence of each object at risk-frame

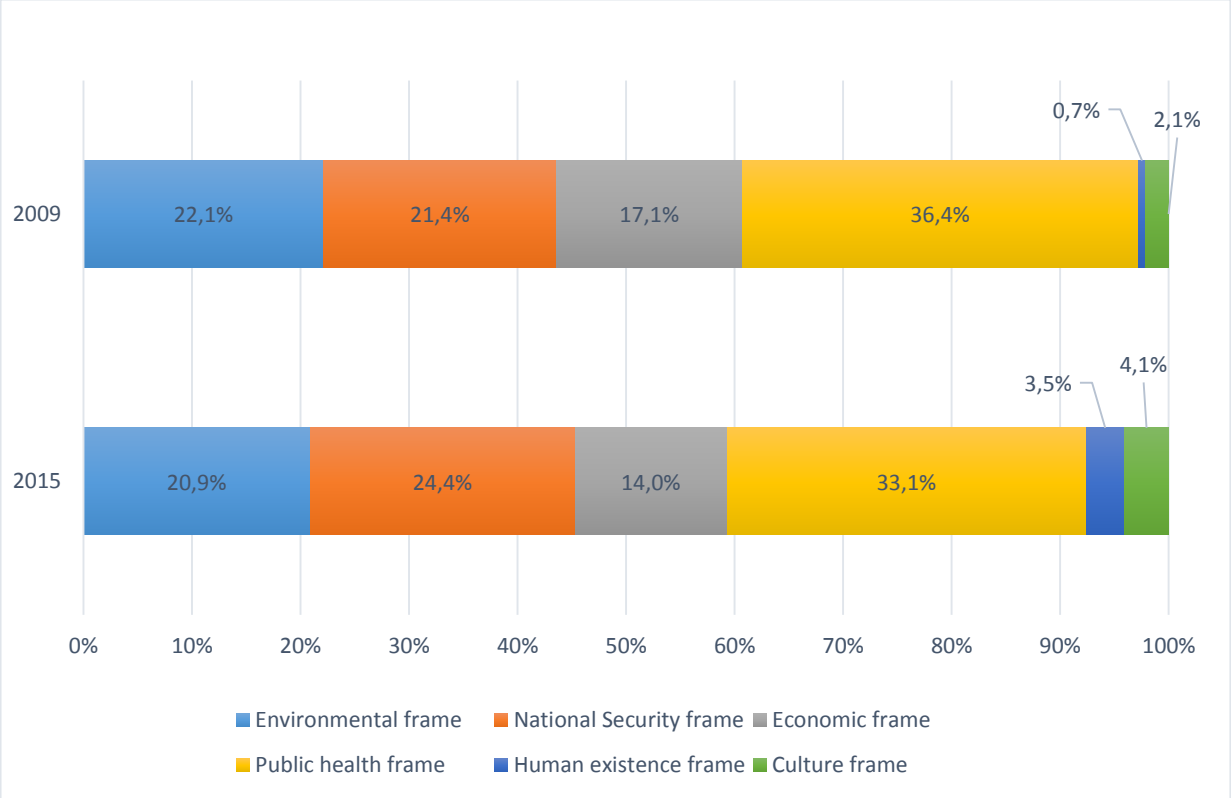

Figure 5 – percentage share of each object at risk-frame

This section will present the findings for the *object at risk-frames* in 2009 and 2015. As explained in the *relationship of risk-categories* section*,* several different *object at risk-frames* might be identified in one single article. Therefore, despite that there were only 106 articles identified as communicating one or several climate change risks in the articles from 2009, the number of frames coded for this year were 140. While for 2015, there were 132 articles identified and coded as communicating a climate change risk, nevertheless, 172 frames were coded for this year (see: table 1 and figure 4).

The results concerning the identified *object at risk-frames* shows some interesting results. First and foremost, the *public health frame* was the frame that appeared most times in the articles from both 2009 and 2015. For 2009 the *public health frame* constituted 36, 4 percent of all *object at risk-frames* identified and slightly less in 2015, constituting 33, 1 percent of the frames (see: figure 5). The *public health frame* did, however, occur more times in 2015, identified 57 times compared to 51 in 2009. Thus, there was only a marginal difference in media framing climate change risks as a public health issue between these two years. An observation made from these results is that previous research has found that the *environmental frame* historically has been the most common way to frame a climate change risk story (e.g. Myers et al. 2012: 1106). Swedish newspapers framing climate change risks as a public health issue to such a large extent could therefore be considered rather surprising, as it contradicts these findings from previous research. However, it could be argued that media framing climate change risks as a public health issue is rather logical, in comparison to framing it as an environmental issue. Environmental systems and services at threat from climate change can be complex, which makes risks towards them distant and difficult to understand for the common individual (Maibach 2010: 2). For instance, in-direct consequences such as poisoned fish due to increased algal blooming which is due to increased temperatures, can be difficult to grasp, and also being considered uninteresting and difficult to report on by news media. Further, climate change risks framed as constituting a risk towards environmental systems etc., can also represent a conflict between environmental interests and other interests, such as capitalistic interests through exploitation of an area that threatens environmental systems and/or services. Hence, perhaps being controversial to report on by media. Meanwhile, public health issues are easily understood (most people understands the science of, for instance, that a drought can lead to scarcity in water), and communicating such issues are commonly not seen as controversial, but rather evokes sympathy for the victims (which will be elaborated on further in the next section concerning the emotional response to the *public health frame*).

Another frame that was used rather frequently in both 2009 and 2015, was the *national security frame.* Framing climate change risks as a threat to national security has become rather popular, in which political figures such has Barack Obama and Bernie Sanders has claimed it as one of the biggest threats

to the United States national security (Rhodan 2015, Carpenter 2016). Climate change risks framed as a national security threat are mainly represented by media in two different ways. Either, they are represented as climate change leading to conflicts, in terms of conflicts over resources or conflicts through tensions created due to e.g. climate refugees (e.g. Barnett and Adger 2007); or, they are represented as constituting a national security threat through direct impacts on the nation-state. For instance through 'storms', in which the nation-state's territorial borders, citizens etc. are at risk (e.g. Busby 2007). These differences shows the multiple and complex ways climate change is constituting risks towards societies. What is further interesting about framing a climate change risk as a national security threat is how easily it could be interpreted as another frame, or vice versa, depending on details in the medial representation of a climate change risk. For instance, on several occasions during the data collection, climate change risks were constructed by journalists in a manner that could be interpreted as constituting a threat towards either the national security (e.g. a nation-state's 'coastal territorial border'), the environment (e.g. 'the coast line') or a threat towards public health (e.g. 'the home and livelihood of the people living on the border/coast line'). This makes it evident that it is of great importance for media representation of climate change risks to be concrete and specific, in order for the information to provide a clear meaning to media recipients. If not, climate change risks may still be perceived as confusing and irrelevant to media recipients and, to refer back to Beck (2009) (see: 4.2.2: Media influence), the foundation upon which the public and policy actors may engage from may suffer.

Two frames emerged during the data collection through the tools applied from the ECA, being the *human existence frame* and the *culture frame.* Both frames were identified in media representation of climate change risks in both 2009 and 2015. However, both frames were also more apparent in 2015 than in 2009. Framing climate change as constituting a risk towards the whole existence of the human race or a culture/traditional way of living, could perhaps be an efficient way of making climate change relevant for media recipients. However, both these frames were identified to have been communicated rather infrequently in 2009 as well as 2015 and should thus not have any major impact on media recipients. Further, the author of this study has also not found any research concerning media appliance of these frames or these frames emotional effect on media recipients. Therefore, the author believes that media representation framing climate change to constitute risks towards humanity and cultures should be of interest to examine further. Both as a way of strengthening or rejecting this study's results that these frames have become more evident in media representation, and also to examine if these frames are efficient in making climate change relevant to media recipients.

The *economic frame* was identified to have been applied in media representation the same number of times in both 2009 and 2015, while having decreased in 2015 in terms of percentage share of the total

amount of frames identified. While the economic consequences of climate change have been researched upon extensively over the last decades (e.g. Nordhaus 1994, Tol 2009) it appears to be a lack of research on media logic and media recipient response to an economic frame, that should be of interest to further investigate.

The *environmental frame* was identified to have increased in 2015 in occurrences, compared with 2009, while having decreased in 2015 in comparison with 2009 in terms of the percentage share the frame constituted in relation to all other frames, making up for about a fifth of all frames identified. As stated earlier in this thesis, the *environmental frame* has in previous research been found as the most applied frame in media representation of climate change risks, which contradicts this study's results. However, comparisons with this study's results with previous research should be presented with caution. As there have been few studies who have coded climate change risks in accordance with the frames used in this study, no standard coding manual exists for when a climate change risk should be regarded as being framed as, for instance, an environmental issue. Previous research have contributed to this thesis in defining what is included in an *environmental frame*, but essentially it has been the author of this study who have had to formulate the actual coding manual. It is therefore possible that climate change risks identified as being framed in a certain way in this study, would have been identified as being framed in an alternative way in other research. Nevertheless, as the coding manual and coding procedure in this study have been identical for the reviewing and coding of articles from 2009 and 2015, it should be considered valid to compare the results of media representation of climate change risks from these years.

6.2: Emotional response to media representation

This section will elaborate on the emotional response to the framing and spatial situating of climate change risks. Firstly, by analysing and discussing climate change risks framed as concerning public health issues in 2009 and 2015, and secondly by analysing the spatial situating of climate change risks.

6.2.1: The public health frame and its emotional response

The results indicate that media have framed climate change risks as a public health issue to a relatively high amount in both 2009 and 2015, constituting about a third of all *object at risk-frames* identified for each year. Framing climate change risks as a public health issue to such a large extent could clearly be argued to have had an impact on how media recipients relate to climate change risks. As mentioned in the theoretical framework and in the previous section, the *public health frame* helps media recipients to perceive and comprehend climate change risks. Risks framed as such are relatable as they refer to issues that all individuals are familiar with, such as allergies, infectious diseases, asthma etc. Swedish news media framing climate change risks as a public health issue to such a large extent could

therefore be argued to make climate change highly relevant to media recipients (Maibach et al. 2010: 10). As also stated in the theoretical framework, such high representation of the *public health frame* also results in an emotional reaction and feeling of 'hope' among media recipients. Meaning, as previous research has pointed out, that a *public health frame* is more likely than any other frame to result in a feeling that there can be a better and healthier future, if mitigating and adaptation strategies to climate change are undertaken (ibid.). In turn, the perception and comprehension of the *public health frame,* as well as the emotional response of 'hope' which such a high representation of the *public health frame* brings, should increase the general engagement among media recipients towards mitigating and adapting to climate change. Both in terms of media recipients of this frame being more willing to adapt to a more environmental friendly lifestyle, but also to support climate friendly policies. To sum the reasoning above then, the results from this study concerning the *public health frame* should have had a considerable impact on media recipients' emotional response to climate change risks, hence their will to undertake and support climate change mitigating and adaption strategies.

There are, however, certain instances that should be addressed for such a statement. Firstly, while the *public health frame* was identified more frequently in media representation in 2015 than in 2009, it could be concerning that the percentage share this frame was applied has decreased between these years. Especially since research that has strengthened the *public health frame* as an efficient frame for communication, have mainly been identified to have been published *after* 2009 and *before* 2015. Hence, such a decreasing share of the *public health frame* within climate change risk news stories results in other frames, that are not as efficient in evoking an emotional response among media recipients, to be more apparent to media recipients. Secondly, while it should be regarded as positive for media recipients' engagement to climate change, it should be obvious that no conclusions can be made on swedes' engagement towards the climate change issue, based on media representation of climate change and the results of this study. Lastly, it has to be addressed that one of the beneficiaries for the emotional response to a *public health frame* is that news articles that frame climate change risk stories in such a manner often shift the geographical focus from being far away to within a relevant spatial proximity of the receiver of the message (Nisbet 2009: 22). This has not been the case for the results of this study, which will be elaborated on in the following section.

6.2.2: The spatial situating and its emotional response

This section will present *where* the coded news articles situated climate change risks (see: figure 6 and 7). Thus, contrary to the coding of the *relationship of risk-categories* and *object at risk-frames*, each article has only been coded once for its spatial/geographical space. Firstly, the spatial situating of the *public health frame* will be addressed, to be followed by the spatial situating of the other *object at risk-frames*.

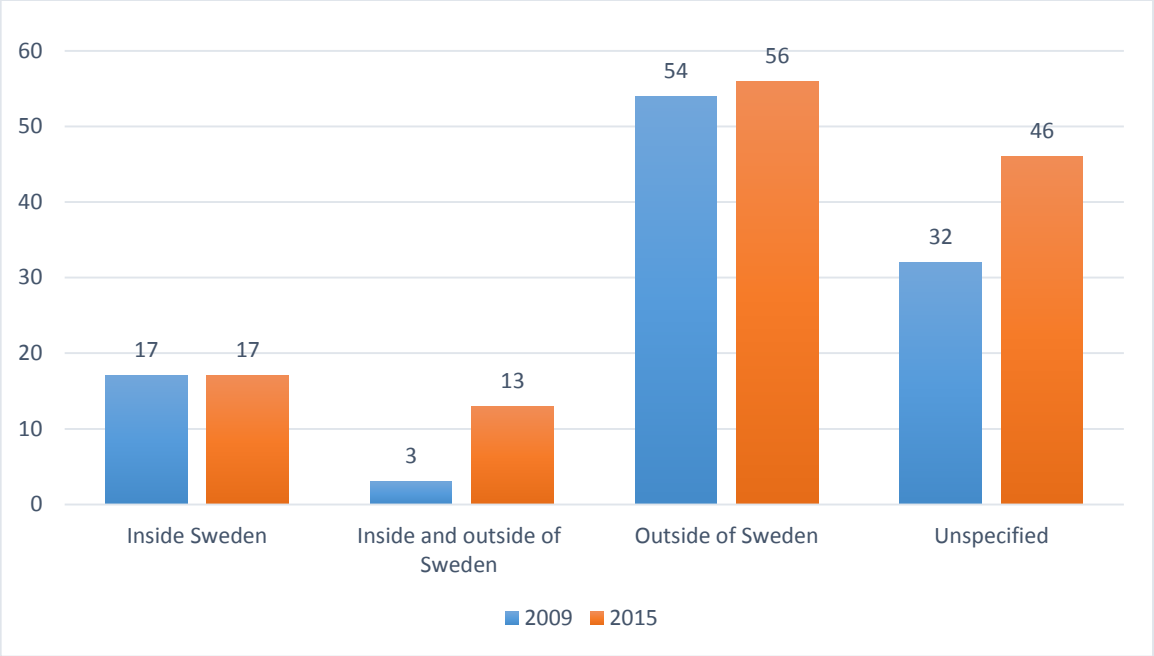

Figure 6 – Occurrence of each spatial situating-category

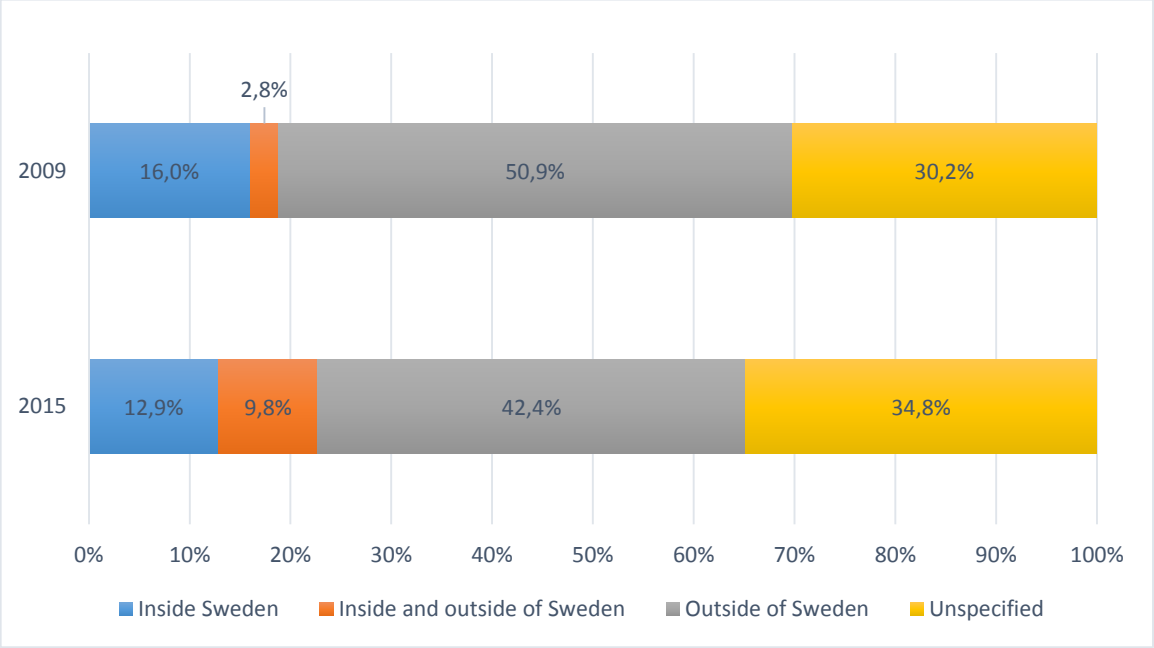

Figure 7 – percentage share of each spatial situating-category

Regarding 2009, while 51 articles were identified as communicating a *public health frame*, merely 10 of these were identified as situating the *public health frame* in Sweden alone, while only one article was identified to situate a *public health frame* in Sweden *and* outside of Sweden. Hence in total, out of 51 articles that had framed climate change risks as a public health issue, only 11 of these articles spatially situated these risks in Sweden in any manner. For 2015 this number is even lower, in which

out of 57 articles identified as communicating a *public health frame*, only one (!) article was spatially situated in Sweden alone, while only two articles spatially situated climate change risks framed as a public health issue in Sweden *and* outside of Sweden. Thus, in total, only three articles from 2015 were identified as being spatially situated in Sweden in any manner, being only 5,3 percent of the total identified articles having climate change risks framed as a public health issue. Thus, more *public health frames* were identified to be spatially situated in Sweden in 2009 than in 2015. However, it should be noted that this can partly be traced to a two week period in 2009 during which all examined newspapers reported similarly on the public health risks of the increasing amount of mosquitos in mid-west of Sweden.

As stated above, the *public health frame* is generating an emotional response among media recipients by displaying already comprehendible issues, such as diseases and allergies. The second aspect, however, is that these comprehendible issues are situated in the locality of the media recipient. Thus, as the results show that this aspect – spatially situating climate change risks framed as a public health issue in Sweden – have been highly misrepresented by Swedish news media, it could be argued that the projected positive impact the *public health frame* would have on media recipients, have been diminished.

Regarding the spatial situating of the other frames used in this study, the amount situated in Sweden was considerably low for them as well. Regarding the spatial situating in the articles from 2009, the *environmental frame* was identified to be situated in Sweden three times in Sweden alone, and one time as being situated both inside and outside of Sweden; the *economic frame* was coded five times in Sweden alone and zero times being situated both inside and outside of Sweden; the *national security frame* was coded one time in Sweden alone and zero times as being situated both in and outside of Sweden; the *human existence frame* was coded zero times as being situated in Sweden in any way; and the *culture frame* was coded one time in Sweden alone and one time as being situated in both inside and outside of Sweden. Regarding the spatial situating in the articles from 2015, the *environmental frame* was identified to be situated in Sweden 10 times in Sweden alone, and six times as being situated in both inside and outside of Sweden; the *economic frame* was coded five times in Sweden alone and two times being situated both inside and outside of Sweden; the *national security frame* was coded one time in Sweden alone and seven times as being situated both in and outside of Sweden; the *human existence frame* was coded zero times as being situated in Sweden in any way; and the *culture frame* was coded three times in Sweden alone and one time as being situated in both inside and outside of Sweden.

In total, combining both the *public health frame* and the other frames, while there were 17 articles from 2009 in which the climate change risk(s) were identified as being spatially situated inside Sweden alone, a total of 20 *object at risk-frames* were identified to be within these articles. Meaning that there were more than one frame identified in a single article in some of the 17 articles. For 2015, the same number was 22 *object at risk-frames* in a total of 17 articles that were identified as being spatially situated inside Sweden alone. Concerning articles that were identified as being spatially situated inside and outside of Sweden, three *object at risk-frames* were identified in the articles from 2009, while 18 *object at risk-frames* were identified in the articles form 2015.

In the end, concerning 2009, out of totally 106 articles and 140 *object at risk-frames* (see section 6.1.3: Object at risk-frames) coded, 20 articles were identified as situating one or several climate change risks in Sweden in any way possible, in which a total number of 23 *object at risk-frames* were identified in these articles. For 2015, out of totally 132 articles and 172 identified *object at risk-frames* coded, 30 articles were identified as situating one or several climate change risks in Sweden in any way possible, in which a total number of 40 *object at risk-frames* were identified in these articles. Thus, the results show that even if there were less *public health frames* spatially situated in Sweden in 2015, there were still more articles and more *object at risk-frames* in total, that situated climate change risks in Sweden, in comparison with 2009. Beyond the *public health frame*, what should be pointed out is that the *environmental frame* was spatially situated for a total of 16 times in Sweden in 2015, compared to four times in 2009, as well as the *national security frame* being spatially situated eight times in Sweden in 2015, compared to one time in 2009. Media representation has thus improved at linking challenges constituted by climate change towards the Swedish environment as well as the national security and territorial borders, in 2015 than in 2009. Moreover, both the *culture frame* and the *economic frame* were identified to be somewhat more spatially situated in Sweden in 2015 than in 2009. It should be considered positive from an emotional responsive perspective, that media representation is spatially situating more frames in Sweden in 2015 than in 2009. Such results should, according to research, make it more likely for media recipients to engage with the issue of climate change and act more environmentally friendly (see 4.5.3: Spatial situating of climate change risks and its emotional response).

Chapter 7: Conclusion

This study has examined how media representation of climate change risks have transformed in Swedish newspapers over a period of time. Articles published in 2009 and 2015 in the metropolitan newspapers *Aftonbladet, Dagens Nyheter, Expressen, Göteborgsposten* and *Svenska Dagbladet* were reviewed which led to over 800 articles being reviewed and over 200 identified as communicating a climate change risks, and were thus coded and analysed.

The results showed that climate change risks have been represented similarly in 2009 and 2015 by the examined newspapers. However, some factors deserve to be attended. Firstly, the number of articles reviewed in 2015 were less than in 2009, but more articles were identified as communicating a climate change risk in 2015. Such results indicate that media has improved from 2009 to 2015 in linking climate change to what it threatens. Secondly, the results showed that for approximately every third news article communicating a climate change risk, newspapers does not specify the relationship between how climate change threatens an *object at risk*. These results concerns both 2009 and 2015 and begs the question if only constructing and communicating climate change as the sole risk – both *risk object* and *relationship of risk* – undermines the message of a risk, or if it is strengthened by emphasising climate change as the sole reason for something being at risk. Thirdly, the results showed that the framing of how *objects at risk* were at risk due to climate change, was rather similar in 2009 and 2015. The *environmental-* and *national security frame* increased in occurrences in the articles from 2015, but decreased in the percentage share they constituted, in comparison with 2009. Two new frames were identified during the data collection – the *human existence-* and *culture frame* – which both were applied more in occurrences and percentage share by media in 2015 than in 2009. Further, the *economic frame* was identified to have been applied the same number of times in 2009 and 2015, but decreasing in 2015 in the percentage share it constituted. What was found most interesting regarding frames was the fact that in both 2009 and 2015, more than 30 percent of all climate change risk stories were framed as constituting a threat towards public health, being the most used frames in both years. These results is differing from previous research in which climate change risks have been framed mostly as an environmental issue. This high representation of climate change constituting a risk towards public health should according to previous research generate a greater amount of concern, hope and engagement among the public in engaging with climate change and support for environmental friendly policies. However, as most of the articles framed as public health issues were spatially situated outside of Sweden, such engagement in climate change issues can be argued to have been undermined. In general, few of the examined articles situated climate change risks in the locality of Sweden, which in turn should, according to previous research, undermine the public's concern for engaging with climate change. Nevertheless, newspapers from 2015 had improved to an extent in

comparison with 2009, in situating climate change risks in Sweden. This was done through an increase of situating climate change risks in Sweden *and* outside of Sweden. Thus, it has been argued that these findings could indicate an improvement to have happened within media to connect the global impacts of climate change to both Sweden and other places.

While the results of this study might not work as a fair comparison to research made in other countries, due to the possibility of different coding manuals, the results do show that the construction and communication of climate change risks has not transformed significantly between 2009 and 2015. Moreover, media recipients' emotional response to media representation should also be similar between these years. While the *public health frame* was used to a large extent in both years, media were poor in situating climate change risks in Sweden. Thus, if Swedish media recipients are to be more involved and engaged in the issue of climate change, previous research suggests that media is in need of transforming their representation of climate change risks by spatially situating more risks in media recipients' locality – i.e. Sweden. Only when media represents climate change risks in such a manner can a majority of the public find the issue relevant to them, thus making it a priority for themselves and for the political establishment.

This study has raised some questions and come across some instances that should be of interest to further explore. For instance, while this study has examined the spatial situating of risks, it would be of interest to examine the temporal situating of media representation of climate change risks. Further, as not enough time and space was available for investing such inquires in this study, it would be of interest to examine how climate change risks were reported on in accordance with the journalistic norms of *dramatization, personalization* and *novelty* (described in 4.2.1.). Examining all of these aspects of media representation would further strengthen the picture of how climate change risks are represented by news media. Aspects which in this study has been argued to be of great importance to examine in order to understand the political process and public engagement to mitigate and adapt to climate change.

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