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Securitization of media reporting on climate change? A cross-national analysis in nine countries

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Abstract

Security implications of climate change have been highlighted by various political and advisory bodies, as well as non-governmental organizations (NGOs), in recent years. It is unclear, however, whether such a 'securitization' of climate change can also be found beyond institutionalized politics in the public realm, and beyond Western countries. This article addresses these questions by investigating mass media coverage in nine countries over a period of 15 years. Based on an analysis of more than 101,000 newspaper articles, it shows an increasing discussion of climate change in security terms, with diverging trends in the analysed countries. While Western, industrialized countries such as the USA, the UK or Australia display an increasing securitization of climate change, the amount of securitizing language has decreased in India and South Africa. Moreover, different countries refer to different security dimensions – with regard both to the subjects whose security is of concern (national security, human security) and to the type of resources that are discussed in security terms (energy security, water security, food security). While Western countries strongly focus on national security and energy security, emerging economies place greater emphasis on food and, less pronounced, on water security.

Keywords

Communication, human security, mass media, national security, securitization, security

Introduction

Climate change affects natural and social systems in many parts of the world. Accordingly, public debates on climate change have intensified and diversified in the past decade, covering a range of

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topics from the science of climate change to economic aspects, political measures and implications for everyday life (Kirilenko and Stepchenkova, 2012; Schmidt et al., 2013).

In the wake of this diversification, there has been a growing interest in the potential security implications of climate change. Following the publication of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2007, the debate intensified as political and advisory bodies, think-tanks and NGOs on both the international (see e.g. United Nations [UN] Security Council, 2007, 2011) and the national level (e.g. WBGU [German Advisory Council on Climate Change], 2008 in Germany; Steinbruner et al., 2012 in the USA) highlighted the impacts of climate change on water and food security, on weather extremes and migration, and on violence and conflict in climate 'hot spots'. In 2014, the IPCC included an entire chapter on the implications of climate change for human security in its Fifth Assessment Report, concluding that 'climate change and climate variability pose risks to various dimensions of human security' (IPCC, 2014: 771).

This 'securitization' of climate change has been particularly pervasive in political discourse. The article at hand analyses whether a securitization of climate change can also be found beyond the institutionalized political realm. Using mass media data from nine countries, it explores whether a securitization of media debates on climate change exists; whether it extends beyond Western countries; and whether its characteristics are similar across the globe. In doing so, the article first describes the securitization concept and its shortcomings in the following section, and lays out why media analysis may mitigate some of these shortcomings. It then goes on to describe the study's data and methods in the second section, presenting the results of the analysis in the third section, and summarizing and discussing them in the fourth section.

The securitization of climate change in mass media

Securitization theory

After the end of the Cold War, scholars began to debate the potential linkages between environmental change and security issues. More specifically, they examined whether environmental degradation would heighten security risks and trigger or catalyse conflicts (Trombetta, 2012). Qualitative, regional case studies assessed the linkages among environmental degradation, resource scarcity and violent conflict (Homer-Dixon, 1991, 1994; Bächler and Spillmann, 1996), while other works suggested a reconceptualization and broadening of security and explored the nexus between the environment and security (Carius and Lietzmann, 1999; for overviews, see Dalby, 2008, 2009; Floyd and Matthew, 2013; and several volumes of the 'Hexagon' book series, such as Brauch et al., 2011).

Linkages to security concerns have also been drawn for anthropogenic global warming. While climate change largely remained an environmental issue throughout the 1990s, research on the climate–security nexus gained ground as climate change was elevated to the top of the international security agenda (Brauch, 2002; Barnett, 2003; for overviews, see Brauch, 2009; Brzoska, 2009, 2012; Scheffran and Battaglini, 2011).

Such studies explore how increasing global temperatures alter natural processes and affect social and economic systems in different world regions, including water, food and energy supplies, agriculture and land use, and human health, well-being and survival. The resulting climate-induced stresses are projected to threaten basic human needs and to trigger human responses with security implications, such as human displacement and relocation, that could increase the potential for conflict – ranging from low-level forms such as protests, to riots and rebellions, to the most extreme (but less likely) forms like wars and genocide.

It is notable that the scientific basis for claims about climate change's security implications has not yet been sufficiently substantiated (Barnett, 2003): it remains difficult to single out climate change as a key determinant of conflict. Some studies even provide contradictory evidence, demonstrating, for example, that resource scarcity may lead to cooperation rather than conflict (Wolf, 2007); that resource abundance (rather than scarcity) may increase conflicts (e.g. Le Billon, 2001); or that capacities for conflict resolution and mitigation have been increasing overall (Gleditsch, 1998; Diehl and Gleditsch, 2000; Barnett, 2000). As a result, the climate–conflict link remains controversial (Bernauer et al., 2012; Buhaug et al., 2014; Theisen et al., 2013; Scheffran et al., 2012a, 2012b; Hsiang et al., 2013).

Irrespective of their scientific foundations or actual impact, however, the security implications of climate change have been addressed by political institutions, as well as in political discourse and political rhetoric (Brzoska and Oels, 2011; Oels, 2012; Methmann and Rothe, 2012). The general line of argumentation is that climate change acts as a threat multiplier, particularly in certain hot spots, and interweaves the water–food–energy nexus with locally specific conditions of disaster, migration and violent conflict to undermine the stability of certain regions.

The rising political attention given to these facets has been interpreted as a 'securitization' of climate change. The securitization concept emerged in the post-Cold War era, as a tool to analyse a broadening of the security concept to include new issues previously considered to be unrelated to security. The Copenhagen School of Security Studies analyses how policymakers, experts, advisers and the broader public construct security threats through policy declarations (speech acts) to create emergency conditions (Wæver, 1995, 1997). These declarations are addressed to an audience that is expected to react. Securitization is characterized as having three components: 'existential threats, emergency action, and effects on interunit relations by breaking free of rules' (Buzan et al., 1998: 26). In extreme circumstances, securitization may even legitimize the use of violence and military or police action (Wæver, 1995, 1997).

Different agents have used security-related terms to draw public attention to climate change, including researchers, consultants, think-tanks, media, national governments, supranational institutions, international organizations and regimes, each focusing on specific aspects, methods, interests, pathways and responses (Balzacq, 2005; McSweeney, 1996; Rørbæk, 2012).

Critical assessments have pointed to several shortcomings of the securitization approach: its emphasis on 'exceptional' measures; its focus on security experts and their often realist thinking; its neglect of the audience and the media; and the Eurocentric bias of its research agenda (Bigo, 2002; Methmann and Rothe, 2012; Oels, 2012). Addressing some of the shortcomings, we will expand previous assessments to analyse the securitization of climate change, and highlight essential security conceptions, communicative features and the role of the audience and mass media.

Security conceptions

The debate on climate change and security is shaped by different meanings of the term 'security'. To operationalize security, it is important to identify the relevant referent objects that are affected by climate-related security threats; the agents who suggest or take particular actions (i.e. responses to these threats based on values, capabilities and risk perceptions); and the issues that are at risk, such as valuable resources and goods (Scheffran et al., 2012c). Specific configurations of these dimensions have been understood as different 'discourses' (McDonald, 2013; see also Brzoska, 2009) of the securitization of climate change.

While the typologies put forward by different scholars vary in terms of the number and labelling of these strands, most studies on the securitization of climate change refer to the levels of referent objects and responding agents (e.g. Brzoska, 2009; Grauvogel, 2011; Page, 2010; Trombetta, 2011). In doing so, they differentiate between 'national' (or 'state') security and 'human' (or 'livelihood') security, sometimes also distinguishing 'international' and 'ecological' security. In a recent review article, McDonald (2013: 47) notes, however, that international security

> sits between the national and human security discourses: there is an emphasis on the dangers that climate change poses to stability and the status quo that is reminiscent of the national security discourse, but there is also strong emphasis on the need for internationalism in response to climate change and a central role for global cooperation.

On the other hand, he argues that ecological security 'has not achieved a position of prominence in debates about responses to climate change' (McDonald, 2013: 48). As the scholarly consensus on 'national' and 'human' security is considerably greater, we decided to focus on these in the present article.

Most established in security policy – and for many, in fact, synonymous with it (see McDonald, 2013: 45) – is the concept of *national security*, where nation-states act as both referent objects and responding agents. The extent and nature of national security assessments vary by country. Developing countries, which are less responsible for global warming, would be more affected and less capable of taking countermeasures (Harmeling, 2009). While industrialized countries may also be exposed to climate stress, they are usually less sensitive and have higher adaptive capacities. When an issue is securitized, it becomes a field for national security institutions – such as the military, the police or border control – and their adaptive responses to counter security threats (Bigo, 2006). Since the mid-2000s, several studies by think-tanks, military individuals and institutions, predominantly in the United States, have explicitly focused on national security perspectives, such as civil war, terrorism, violent unrest and mass movements of refugees (e.g. Campbell et al., 2007; Center for Naval Analysis, 2007). Notwithstanding the use of such rhetoric in the official documents of many countries, however, 'extraordinary measures' have not yet been adopted on a national scale anywhere apart from disaster management (Brzoska, 2012).

After the publication of the 1994 UNDP Human Development Report, conceptions of *human security* gained traction (McDonald, 2013: 46) – in which referent objects are people whose life, well-being and livelihood are threatened, while a variety of agents (states, communities, NGOs, individuals) aim to mitigate these threats. Human security is based on 'shielding people from acute threats and empowering people to take charge of their own lives' (Commission on Human Security, 2003: iv), and has been defined by the UN Secretary-General (2010) 'as freedom from fear, freedom from want and freedom to live in dignity'. Accordingly, the IPCC (2014: 759) has characterized human security as 'a condition that exists when the vital core of human lives is protected, and when people have the freedom and capacity to live with dignity'. In the framework of livelihood security, it represents a bottom-up perspective of 'putting people at the centre and taking equity, human rights, capabilities and sustainability as its normative basis' (Bohle, 2009: 528). Various studies have emphasized the relevance of human and livelihood security in the context of climate change adaptation (Barnett and Adger, 2007; Scheffran and Remling, 2013), and some argue that, in the near term, climate change will be more relevant for human security and low-level violence than for national security and large-scale military warfare. 'Ultimately, those advocating a link between climate change and human security are attempting to mobilise environmental action without defaulting to the state as security referent and provider' (McDonald, 2013: 47) and favour responses beyond the mitigation of global greenhouse-gas emissions. These responses include the adaptation of communities to the potential effects of climate change to increase their resilience, as well as the redistribution of material resources and know-how to support this.

In addition to these actor-oriented security conceptions, securitization has also focused on the *security issues* that are affected by climate change – particularly resources such as water, food or energy that are essential for human life, society and the economy, but may also be subject to political and economic competition. The respective concepts of *water security*, *food security* and *energy security* feature prominently in the climate change discourse and can be understood as catalysts of human and national security (see WBGU, 2008; Tirado et al., 2010). Changing the availability of these resources, especially through their degradation or variation in accessibility, can affect states and societal institutions – that is, national security – as well as communities or citizens – that is, human security. The relative emphasis on these dimensions and the responses to them is shaped by political and economic power structures, as well as geographical and geopolitical contexts, and, as a result, varies from region to region (see Grundmann et al., 2013).

Communicative and constructive features of climate change securitization

The securitization of climate change is a communicative process, consisting of speech acts. The 'ultimate target' is an audience that 'receives the securitizing actor's "speech act", or is the final consignee of the actor's effort to elevate a problem into a security threat' (Karafoulidis, 2012: 261). Compared to the other pillars of 'securitizing actors' and 'speech acts', however, the audience concept has received relatively little attention in the securitization discourse. On the one hand, the audience consists of politicians – whom actors aim to influence with their speech acts 'in a positive way, so that they may raise their goals a little higher' (Rørbæk, 2012: 273). On the other hand, securitization also targets the broader public, because far-reaching political measures also rest upon public acceptance and legitimation.

In their attempts to 'understand the processes of constructing a shared understanding of what is to be considered, and collectively responded to, as a threat' (Buzan et al., 1998: 26), however, securitization researchers have mostly presented theoretical works (e.g. Vultee, 2007: 3), and the few empirical studies that do exist exhibit two significant shortcomings.

First, while a number of analyses have focused on the securitization of climate change in the political realm, *much less is known about its broader societal uptake*. Research on the securitization of climate change has not yet ventured far beyond institutional politics. Although the general public is normally considered a relevant audience, it remains a broad and abstract entity that has received relatively little attention. This is surprising given that political initiatives have to rest upon at least a basic level of public acceptance and legitimacy (Balzacq, 2005), and this is particularly true for the securitization of climate change, which aims to actively mobilize audiences. In a democratic society, the success of securitization depends on the ability of the securitizing actors to gain political support for their objectives and increase the weight of their position relative to competing positions in public discourse. Thus, convincing the public can be decisive in bridging the gap between rhetoric and real political action, and access to mass media can be essential to achieving this goal (Taureck, 2006; Karafoulidis, 2012). Analysing whether public and media debates about climate change are also securitized, therefore, would fill an important gap in securitization literature.

Second, the *bias of securitization research towards Western countries* has repeatedly been highlighted (e.g. Methmann and Rothe, 2012; Oels, 2012). As most studies have focused on supranational political bodies or Western,[1] industrialized countries, it remains unclear to what extent security concerns can be found beyond the political sphere of these countries and the rhetoric of supranational institutions such as the UN. This is particularly important given that the meanings of terms used in the securitization discourse are problem-specific and region-specific (Barnett, 2003) – and responsibilities for and vulnerabilities to climate change vary considerably from region to region (DARA & Climate Vulnerable Forum, 2012; Harmeling, 2009; World Bank Group, 2012).

As a result, political perspectives on the issue diverge clearly between developed and developing countries (as is demonstrated in UN Security Council debates; see UN Security Council, 2007, 2011). Climate threats are mostly articulated by actors in industrialized countries, with developing countries being depicted as victims (see Doulton and Brown, 2009).

Analysing mass media to assess securitization

Both desiderata – the lack of knowledge about a securitization beyond the sphere of institutionalized politics and beyond Western countries – will be tackled here by analysing securitization using mass media coverage of climate change in a cross-national study that extends beyond the Western world. The underlying assumption of this research is that mass media coverage is a suitable measure for the societal uptake of phenomena such as climate change and their security implications. Whatever the referent objects of security threats and the agents responding with securitizing speech acts, these are likely transmitted through mass media to reach an audience in order to justify political measures in public decisionmaking. Thus, mass media reporting of climate security threats is an indicator of securitization attempts and related discourses (which does not necessarily imply that they are successful in influencing the audience to support extraordinary measures).

Thus, regarding the first desideratum – the lack of analyses focusing on the broader societal relevance of the securitization of climate change – we think that mass media are an appropriate indicator for a public securitization. The media have been portrayed as the 'master forum' (Ferree et al., 2002: 9) of the public sphere in modern societies: they provide a continuous (i.e. not temporary) public forum where a diverse set of political, economic, scientific, cultural and other issues of common concern can be placed and debated. While media are not a neutral forum in which all actors and arguments are treated equally – media have political agendas, are influenced by certain interests, and may prefer some views to others (see e.g. Boykoff, 2011) – they influence other fora of societal communication, from pubs and schools to parliaments. And because of the general importance of the mass media, they are both addressed and interpreted by societal stakeholders as being highly important. In order to influence the general public or decisionmakers, stakeholders concerned with a given issue generally aim to position themselves in the mass media to express their views and make these views as dominant as possible relative to other stakeholders or divergent viewpoints. In turn, the mass media are interpreted by many as an expression of how a society views an issue – including by politicians, who often interpret mass media as the voice of public opinion (Fuchs and Pfetsch, 1996; Yanovitzky, 2002).

In addition to their general relevance, mass media are a particularly important forum for public debates about climate change (see Schäfer, 2015 for an overview). Because climate change is a complex, largely invisible phenomenon with causes and consequences that lie beyond the lifeworlds and biographical horizons of most (Moser, 2010), mass media are crucial sources in shaping people's information and perception and are 'important agents in the production, reproduction, and transformation of the meaning' (Carvalho, 2010: 172) of climate change. It has been shown that the public 'draws most of its knowledge' (Anderson, 2011: 535) about climate change from the media (Leiserowitz et al., 2015; Metag et al., 2015; Stamm et al., 2000) and trusts them more on the issue than other sources, including family and friends (Schäfer, 2012; Synovate, 2010). Fittingly, mass media coverage of climate change has been shown to have increased significantly in countries around the world (Boykoff and Mansfield, 2013; Schmidt et al., 2013), influencing the public as well as the political agenda (Liu et al., 2011) and triggering responses by decisionmakers (see e.g. Weingart et al., 2000). It is highly likely that media coverage also affects the broader societal perception of climate change as a potential security issue, as well as the institutions and communities considered appropriate to deal with it (Rørbæk, 2012).

Using mass media data also enables researchers to analyse and compare debates in different countries and over time. Media data, at least from print media, are readily available and easily accessible in large databases, and can be analysed efficiently (Boykoff and Mansfield, 2013; Grundmann et al., 2013).[2]

For these reasons, media coverage is a viable indicator for assessing a society's prevalent perspectives on the securitization of climate change. Thus far, however, studies analysing media communication about climate change have scarcely dealt with its potential security implications (for an early overview, see Vultee, 2007). While some scholars noted the use of securitizing language in media representations of climate change (Carvalho and Burgess, 2005: 1466–1467; Weingart et al., 2000: 272), they did so in passing and focused only on Western debates. Another study analysed political speeches delivered in preparation for the Copenhagen climate summit in 2009 (COP 15) and their representation in newspapers (Rothe, 2012), but its analysis was confined to Germany, and its small sample of 60 newspaper articles and political speeches did not allow for extensive generalization. Other articles on the discursive construction of 'climate refugees' in the media (such as Carvalho and Oels, 2012) have similar limitations.

The article at hand aims to go beyond these limitations. It will be guided by two research questions. The first asks 'To what extent has climate change been securitized in the media of different (Western and non-Western) countries?'. The second poses the question 'How are potential security threats posed by climate change conceptualized in these media?'.

Mass media analysis: Data and methods

The research questions will be answered through a comparative analysis of media coverage from nine countries. A comparative, cross-national research design was chosen because securitization perspectives have been shown to be region-specific (Barnett, 2003), and because public views and mass media debates, even on transnational issues, are still predominantly nationally bound (Beck and Grande, 2004; Machill et al., 2006).

The country selection followed a fourfold rationale. First, we included countries with different degrees of responsibility for climate change – measured by their current per capita CO_2 emissions as well as by their status in the Kyoto Protocol (see Table 1) and with different degrees of vulnerability to its consequences, such as extreme weather events, droughts, etc. measured by the country's ranking in the global Climate Risk Index (Harmeling, 2009). Because these responsibilities and consequences are seen in the literature as important drivers or contributing factors to climate-related security risks and have been shown to influence domestic media coverage of climate change (Schäfer et al., 2014; Schmidt et al., 2013), they can also be expected to impact the degree and dimensions of securitization in these countries. Second, in order to mitigate the existing Western bias within securitization research, we included not only Western, developed countries in our analysis but extended it to non-Western and developing countries. In doing so, third, we avoided authoritarian countries where the media may be purely an expression of government views. The fourth factor determining country selection was the availability of suitable and societally relevant English-language media. Following these criteria, nine countries were selected for analysis: Australia, Canada, India, New Zealand, Singapore, South Africa, Thailand, the UK and the USA.

These countries' public debates were assessed using mass media data. The study aimed to select mass media that exist in similar forms in all selected countries, which are particularly influential in their respective national contexts, and whose archives of coverage extend over a longer period of time. Media such as television or radio do not fulfil all of these criteria – particularly because there are no accessible archives for these media in many countries, rendering comparative, cross-country analysis of such media impossible. Therefore, our analysis focused on print media – more specifically, on

Table 1. Overview of analysed countries and newspapers.

Country	Newspaper	LMI	Time period	No. of articles	Long-term Climate Risk Index (2009)	Responsibility: per capita CO_2 emissions (tonnes); status in Kyoto Protocol
Australia	*The Australian*	4	Jan. 1996–June 2010	13,906	44	16.2; Annex B
	Sydney Morning Herald	4		9,534		
Canada	*Toronto Star*	4	Jan. 1996–June 2010	7,773	110	20.0; Annex B
	The Globe and Mail	4		8,350		
India	*The Hindu*	4	April 1997–June 2010	5,710	20	1.2
	Times of India	4		3,137		
New Zealand	*New Zealand Herald*	4	Jan. 1997–June 2010	4,961	78	7.7; Annex B
	The Press	4		1,955		
Singapore	*Straits Times*	4	Jan. 1996–June 2010	2,497	177	12.3
South Africa	*Sunday Times*	3	July 2006–June 2010	383	83	9.8
	The Star	4		1,066		
Thailand	*Bangkok Post*	4	July 1998–June 2010	1,542	55	4.2
	The Nation	4		1,275		
United Kingdom	*The Times*	4	Jan. 1996–June 2010	9,946	66	9.8; Annex B
	The Guardian	4		12,484		
United States	*New York Times*	4	Jan. 1996–June 2010	8,676	34	20.6; Annex B, not ratified
	The Washington Post	4		8,095		
Total				101,290		

Note: The leading media index (LMI) is the sum of four dichotomous variables: Is the newspaper (a) national, (b) characterized by a high circulation, (c) published daily and (d) of high quality? A value of 3 indicates that not all four criteria are met (the *Sunday Times* in South Africa is only a weekly publication). The Climate Risk Index was compiled by the NGO Germanwatch in cooperation with insurance company Munich Re (Harmeling, 2009). It represents the long-term average value of direct damage from historical extreme weather events and refers to relative and absolute personal injury and property damage.

leading, quality print media from each country that have been shown to have a 'guiding societal function' (Wilke, 1999: 302) based on their circulation, reputation, the quality of their journalism or their agenda-setting influence on other media outlets. To be selected for analysis, a newspaper had to meet at least three of four criteria: it had to be (a) a national publication with (b) a high circulation that was (c) published daily and (d) had high journalistic standards (see Table I).

The entire climate change-related coverage of these newspapers was extracted using full-text searches in electronic archives or full-text databases for the period from 1996 (when most of the selected newspapers became available electronically) until June 2010 (when the overarching research project from which the data were drawn ended; see Schäfer et al., 2014; Schmidt et al., 2013). From this coverage, search strings extracted all articles that explicitly mentioned climate change or any of its synonyms – that is, all articles:

- in which the keyword ‘climate’ appears in connection with words indicating change (i.e. ‘change’, ‘changing’, ‘changes’, ‘warming’, ‘cooling’, etc.), and/or
- where synonyms for ‘climate change’ such as ‘global warming’ are mentioned, and/or
- changes of temperature were discussed in relation to the globe.[3]

All articles found with these search strings were then cross-checked using corpus-linguistic techniques, such as duplicate checkers, and extensive manual checks. This search approach allowed for a more refined targeting of climate change coverage than could be attained by studies working with fewer and less-detailed search terms such as ‘climate change’ and/or ‘global warming’ (for an overview, see Schmidt et al., 2013).

In addition, we conducted ‘blank searches’ without any search words for each newspaper over the same 15-year time span, which returned all articles that were published in these newspapers and allowed us to calculate the ratio of climate change-related articles relative to all articles in order to ensure better comparability of article numbers across newspapers that vary significantly in size and output (see Wirth and Kolb, 2012).

Altogether, 101,290 climate-related articles were analysed. The degree of securitization within these articles was measured by identifying articles that discuss climate change using securitizing language. The search did not simply look for securitizing language within the articles, but was specifically restricted to only yielding positive results when the search terms appeared in the same paragraph as terms relating to climate change.[4] This helped to ensure the relevance of returned results by excluding cases where climate change and security issues were referenced separately, even though they appeared in the same article.

In searching for securitizing language, the ‘dictionary approach’ (Krippendorff, 2004: 283) of computer-assisted textual analysis, or text-mining, was adopted. A word list was developed using an iterative approximation of both deductive and inductive steps in order to operationalize securitization and some of its most crucial facets. The search dictionary was compiled on the basis of words that occurred frequently in newspaper articles discussing the potential security implications of climate change, or raising the issue of climate change in the context of security. From an initial word list based on theoretical accounts of securitization, a basic search string was created and the newspaper database was searched using QDA Miner and WordStat software. The results were manually checked to determine the relevance of articles returned by each search term (‘Keyword-in-Context’ (KWIC) checks; see Scharkow, 2013). At least 200 KWIC checks were realized for each final search term. Unsatisfactory search terms were excluded or further refined.

The search dictionaries were thus refined through an iterative approach, in which results were manually checked at each stage and the search string altered accordingly. While it is possible that the initial selection of search terms impacted the final results, this was countered by the continued expansion of the list throughout the process, adding promising new terms that were identified as markers of securitizing language in the newspaper articles. For the final word list, each search term had a hit rate of three out of four positive results, thus meeting and exceeding the methodological threshold established in traditional media analysis (Krippendorff, 2004).[5] Following this step, the number of relevant articles as a proportion of all climate change-related articles and of all articles published was calculated for each newspaper.

The relative importance of different dimensions of security in each country was determined by searching specific word combinations (e.g. ‘national security’ or ‘human security’), with results reflecting the entire period of analysis. This approach was adopted for its simplicity, as well as the

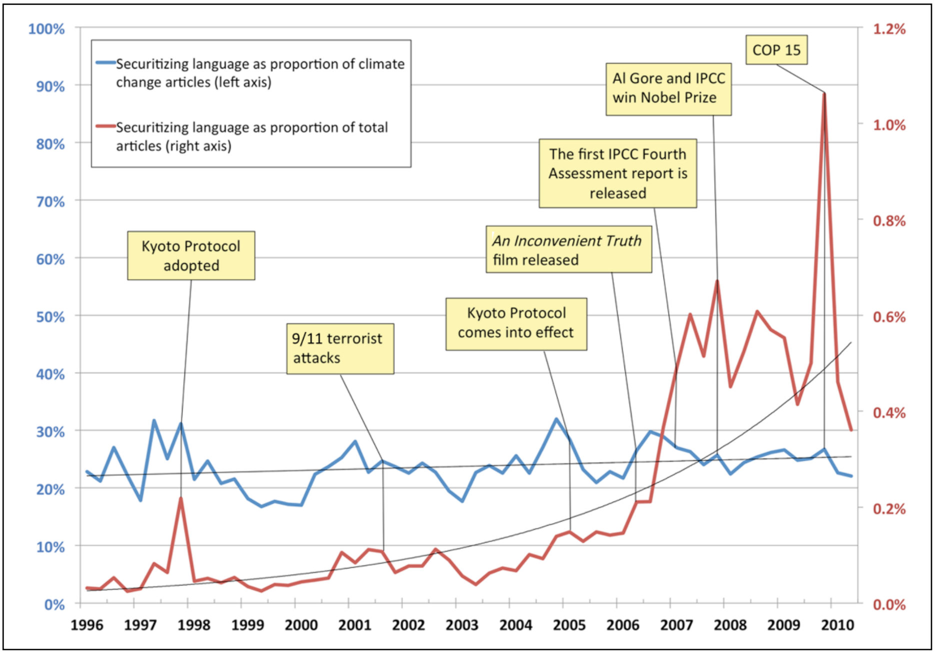

Figure 1. Securitization of the mass media's climate change coverage (all countries, 1996–2010). The graphs show the proportion of articles using securitizing language in proximity to climate change terms, (a) in relation to all articles published in the analysed newspapers per month (dark red graph), and (b) in relation to all articles on climate change in the analysed newspapers per month (pale blue graph). A colour version of this figure is available online at: http://sdi.sagepub.com/content/47/1/76.full

high level of relevance of returned search results. All frequently occurring word pairings using the term 'security' were searched for.

Patterns and variations of climate change securitization in the media

To what extent has climate change been securitized?

When the mass media data from the selected countries are analysed together (i.e. weighting them evenly and without distinguishing between individual countries), the results show that a securitization of climate change coverage is taking place.

On the one hand, there has been a clear increase in the number of climate change-related articles containing securitizing language in relation to all articles published in the analysed newspapers (see Figure 1). Overall, the number of articles on climate change using securitizing language as a proportion of total newspaper articles increased six-fold over the analysed time span, as their share of the entire coverage jumped from an average of 0.09% between 1996 and 2006 to 0.57% between 2007 and 2010. This securitization over time corresponds closely with – and can to a considerable extent be explained by – the overall increase in mass media coverage of climate change that occurred globally during this period (Boykoff and Mansfield, 2013; Schmidt et al., 2013). Accordingly, it also shares some of the characteristics that have been shown for the broader mass media coverage of climate change: the use of securitizing language peaks sharply during specific events, for example at political summits such as the Copenhagen Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 15) in 2009, at the release of the IPCC's Fourth Assessment Report in 2007, following (climate change-related or -unrelated) catastrophes such as the terrorist attacks on 9/11 and Hurricane Katrina, or at cultural events like the premieres of the movies *The Day After Tomorrow* and *An Inconvenient Truth* (see Schäfer et al., 2014).

On the other hand, the securitization of climate change in the media is not only the by-product of a general increase in climate change coverage. The proportion of articles using securitizing language within all climate change-related articles has also increased over time, albeit more slowly. Relative to the period from 1996 to 2006, the use of securitizing language in climate change articles in the period from 2007 to 2010 was 8.7% higher on average. This increase, however, is more gradual and less clearly related to specific events. Neither international security events – such as 9/11 – nor climate change events with security implications – such as the 2007 UN Security Council debate on the security risks of climate change – are correlated with a proportionate relative increase in securitization.

This general trend, however, masks considerable cross-country variation in the proportion of climate change articles containing securitizing language. When the data are organized by country (and articles containing securitizing language put in relation to all climate change-related articles), a stronger securitization trend is visible in some of the countries, while a decrease in securitization emerges in others.

As Figure 2 shows, securitization is occurring in all of the Western countries analysed. Among these countries, US newspapers contain the highest proportion of securitizing language (28.1% of all articles), with an annual increase of 1.2%. The UK media contain the second-highest share of articles with securitizing language (26.3%, annual increase 1.0%), followed by Canada (24.3%, 1.1%), Australia (24.1%, 2.1%) and New Zealand (22.2%, 0.6%). Furthermore, the peaks of securitization are also relatively synchronized between these countries (Ivanova et al., 2014). Most of them exhibit spikes in securitization coinciding with the adoption of the Kyoto Protocol in 1997, with the 9/11 attacks in 2001, with the Kyoto Protocol coming into effect in early 2005, and with the release of Al Gore's movie *An Inconvenient Truth* in 2007.

Singapore (19.4%) and Thailand (22.1%) show a slightly lower overall proportion of articles containing securitizing language. However, these countries actually exhibit the greatest average annual increases in the use of securitizing language of all countries in the survey (4.6% in Singapore, 7.6% in Thailand). The actual quarterly change in both countries, however, is considerably more variable. In part, this volatility can be attributed to the paucity of climate change articles in the earlier period, with the increasing stability in later years resulting from greater coverage of climate change.

In contrast to the findings from the other countries, however, the Indian and South African results show a clear decline in securitization. The proportion of climate change-related articles containing securitizing language shrank by 2.3% annually in India and by 4.1% annually in South Africa (although South African coverage was only available for a shorter period of 50 months between 2006 and 2010). This finding demonstrates that securitization patterns seem to be regionally specific (Barnett, 2000; Grundmann et al., 2013).

How is the securitization of climate change conceptualized in media coverage?

Apart from differing degrees and trends of securitization, media in the nine countries also emphasize different dimensions of security in connection with climate change (see Figure 3).

As a first step, we analysed the extent to which the two main 'discourses' of the securitization debate, national security and human security, were mentioned in the context of climate change. On average, national security mentions considerably outnumber mentions of human security. National

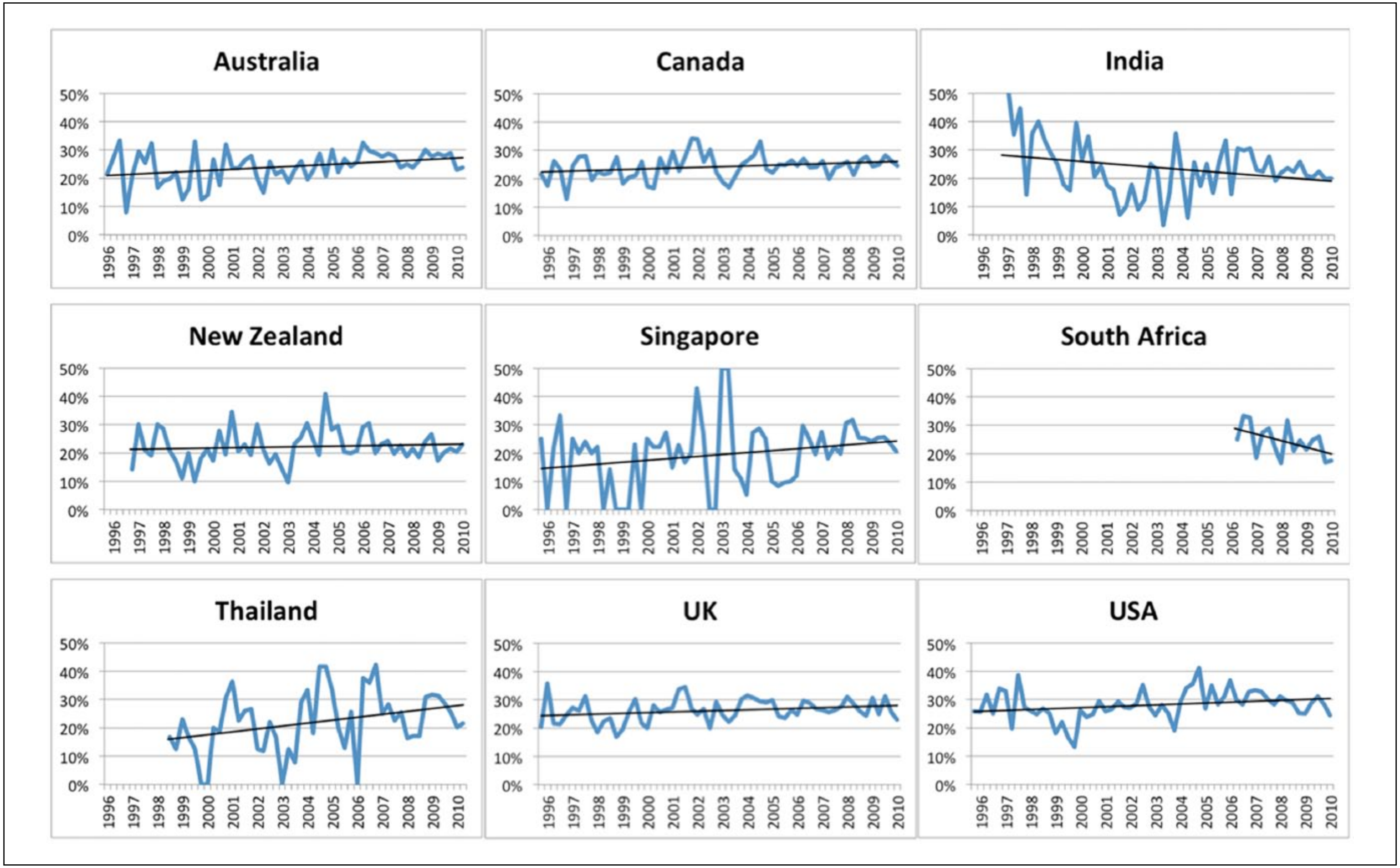

Figure 2. Securitization of the mass media's climate change coverage in different countries. The graphs show the percentage of articles using securitizing language in proximity to climate change terms in relation to all articles on climate change in the analysed newspapers for each quarter.

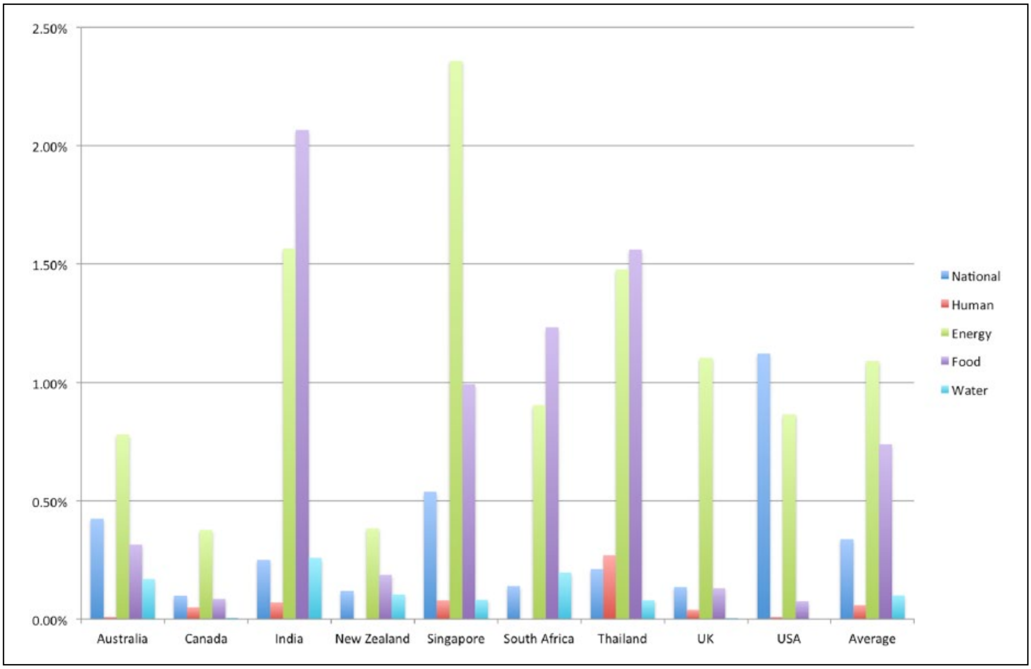

Figure 3. Dimensions of securitization in the mass media's climate change coverage in different countries. The bars show the percentage of articles including references to different notions of security in relation to all articles on climate change in the analysed newspapers over the entire period of analysis.

security is particularly prominent in the media of two countries: it is by far the strongest facet of securitization in US media, accounting for 1.1% of all climate change articles, whereas human security plays almost no role (0.006%), making the ratio between both types of securitization in the USA the most one-sided in all nine countries. Media articles discuss, for example, how 'millions and millions of food refugees' and 'a lot more violence' due to global warming could threaten the USA (*New York Times*, 14 October 2001). This finding is in line with a strong emphasis on national security that spans various issues in the USA in the aftermath of the 9/11 terrorist attacks (see Nelson, 2004). Also very one-sided is Australian coverage, where mentions of national security (0.42%) also outnumber human security (0.007%). This seems to be strongly linked to Australia's ongoing media focus on the issue of potential 'climate refugees' (*Sydney Morning Herald*, 10 December 2001) from nearby island-states, and the question of whether Australia has 'no room' for them (*The Australian*, 6 January 2006; see e.g. Farbotko, 2005; Speck, 2010). The patterns in the Canadian, Indian, New Zealand, Singaporean, South African and UK media are relatively similar. In all of these countries, national security is mentioned more often than human security, but by a smaller margin than in the USA or in Australia. Thailand, on the other hand, stands in contrast as the only country in which human security (0.27%) features more prominently than national security (0.21%). This is in line with the high significance given to human development in the country (see Ministry of Social Development and Human Security [MSDHS], 2009). Media articles in Thailand argue, for example, that 'greater cuts of greenhouse gas emissions by developed countries' are needed 'for the sake of food security, and protection of traditional livelihoods of local populations' in Thailand and beyond, as there are 'communities worldwide who are contributing the least to climate change but suffer the most' (*Bangkok Post*, 19 November 2007).

In a second step, we analysed the extent to which different resources – namely water, food and energy – are mentioned in the context of securitization. The results show that, first of all, energy is the most prominent resource that is discussed in climate change-related security contexts in all Western countries. This mirrors these countries' high levels of energy dependency, in particular their reliance on carbon-based fuels (see Baettig et al., 2008: 485; World Bank Group, 2012) and their obligations under the Kyoto Protocol (Moellendorf, 2009). These two factors have been shown before to cause considerable tension between stakeholders domestically (Lidskog and Elander, 2010: 32–33; Toke, 2013), and to influence media coverage related to climate change (Schmidt et al., 2013). Of the non-Western countries, only Singapore shows a notable focus on energy security. Even though the country has no obligations for greenhouse-gas emissions under the Kyoto Protocol, Singapore depends heavily on energy imports (see World Energy Council, 2013) and is therefore strongly concerned with securing its future energy needs.

While media in the Western countries and Singapore concentrate on energy security, the analysed newspapers in India, South Africa and, to a lesser extent, Thailand place a greater emphasis on food security. This is consistent with these countries' growing populations and corresponding growth in demand for food. The 'Global Hunger Index' (International Food Policy Research Institute [IFPRI], 2014; for similar results, see Wheeler and Von Braun, 2013) reflects the importance of food security to these countries, which are the only ones in our sample assessed as problematic there: Thailand and South Africa were placed in the 'moderate' category (see also Labadarios et al., 2011), and the Indian situation was assessed as 'alarming' (see also O'Brien et al., 2004). Consequently, the media in these countries argue that 'climate change would have a catastrophic effect on South Africa's water and food supply' (*Sunday Times*, 14 October 2007); that 'cash crop yields in tropical countries, including Thailand, would sharply drop if the global mean temperature rose by 1–2°C (*Bangkok Post*, 9 July 2006); that climate change 'could cause devastation to our rice fields and fruit orchards' (*Bangkok Post*, 9 July 2006); and that 'issues of climate change are a matter of life and death [and] not an exotic hobby for white people' (*Sunday Times*, 7 January 2007).

Similarly, newspapers in India and South Africa also place a relatively greater emphasis on water security, indicating that the potential threat of climate change-induced droughts or water shortages has entered media discourses in these countries. They write, for example, that 'as the world warms inexorably, glaciers in the Himalayas are melting away, putting at risk freshwater supplies for millions of people in Asia' (*The Hindu*, 10 April 2007).

Conclusion

In recent years, political and advisory bodies, as well as NGOs, have increasingly highlighted the potential security implications of environmental issues, and of climate change in particular (see e.g. Buzan et al., 1998; Brzoska, 2009; Trombetta, 2008). As most of the relevant literature consists of theoretical accounts of such a 'securitization', and as most empirical studies on the matter focus on Western countries and/or supranational political bodies, it has been unclear whether this securitization can be found beyond institutionalized politics, in the broader public, and whether it extends beyond Western countries.

This article answers these questions by providing an empirical investigation of mass media coverage on climate change in nine countries. Based on a sample of more than 101,000 newspaper articles, it shows that security concerns relating to climate change are not only present on the political level, but also prominent in mass media. Between 1996 and 2010, we find a clear increase in the number of climate change-related articles containing securitizing language. This is particularly visible after 2007, when the fourth IPCC Assessment Report was released and coverage of climate change, as well as its security implications, vaulted to new heights, peaking in 2009 during COP

15 in Copenhagen. Both this strong increase and the specific peaks correspond closely with an overall substantial rise in climate change coverage over this period, suggesting that securitization does not work as a major catalyst for climate change coverage itself. Nevertheless, the relative level of securitizing language has also increased, albeit slightly, within the climate change coverage of the analysed media.

However, this securitization of mass media coverage of climate change differs considerably in trend, extent and focus between the analysed countries. Whereas concerns about security implications trended upwards in Western countries and also in Singapore and Thailand, they shrank in India and appear to trend downwards in South Africa. And while Western countries focus most strongly on energy security in the context of climate change, India, South Africa and Thailand refer more often to food and water security.

These results have implications for securitization scholars. They show that even though security risks associated with climate change have not yet been fully established scientifically and are often difficult to attribute to climate change, concern about the potential security implications of climate change is quite visible in the mass media. The securitization of climate change coverage exists, grows in many countries, and may shape public perceptions and concern about climate change's security implications. At the same time, it is still a relatively under-researched phenomenon, with most securitization studies focusing on political institutions instead of media coverage, and therefore a phenomenon that should be scrutinized analytically more thoroughly in the future. Our study is merely a first foray into this field, highlighting its relevance, demonstrating the suitability of this analytical angle, outlining some general patterns but leaving many questions unanswered. Further studies should go beyond our analysis by describing media representations of the security implications of climate change in more detail – including elaborate linguistic and semantic characteristics such as the use of metaphors of threats (Nerlich, 2010), or visualizations that may induce security concerns (O'Neill, 2013), by broadening the country sample as well as that of the media, and by connecting the findings more thoroughly with insights into the socio-political situation of the selected countries.

In addition, the broader political consequences of the described securitization of climate change coverage should be taken into consideration. This includes, first, the (potential) effects of such media messages on support for and legitimacy of political action aiming to mitigate these concerns. On the one hand, the securitization of media coverage of climate change described in this article could be used to justify security experts preparing for the coming threats and engaging in long-term military planning to adapt to and intervene in security-related disasters and violent conflicts (e.g. US Department of Defense, 2014; McDonnell, 2014), possibly turning talk of 'climate wars' into a self-fulfilling prophecy. On the other hand, it could lead to increased political participation and growing demand for political action (see Kvaloy et al., 2012) to mitigate climate change or at least adapt to it, fostering national laws and international climate negotiations to minimize potential security threats. Potential effects of a securitized climate change coverage also include, second, actions of political institutions themselves. Our findings suggest that concern about security implications of climate change is rising in many countries, and that national as well as transnational political bodies will have to take these concerns into account. On a supranational level, however, any such actions would have to take another finding of our analysis into consideration: the public views on the securitization of climate change differ in the analysed countries, and these differences will likely result in different attributions of responsibility for action, with developing countries highlighting the need for action by Western, industrialized countries, while the latter countries are concerned with different matters. These differences in perspective will make mediating countries' concerns in supranational decisionmaking a challenging process.

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Notes

1. The term 'Western' is used in a way that includes Western and Central Europe, North America, Australia and New Zealand (see Inglehart, 1997; UNDP, 2007).
2. If researchers want to assess which views on an issue are prevalent in society, they have two options. First, they can ask members of that society in large-scale, representative surveys, which are a good way of assessing public opinion at a given point in time. However, surveys are expensive, even more so if different societies are to be compared; and if researchers are interested in longitudinal analyses that compare views over several years, they are usually not feasible. The second option is to analyse a society's cultural products to assess its views on an issue. Among cultural products, and particularly when it comes to issues of common concern, mass media are probably the most relevant, for the reasons outlined earlier.
3. The search string reads as follows: (climat* W/5 (chang* OR catastroph* OR disaster* OR transform* OR adjust* OR trend* OR world* OR earth* OR warm* OR heat* OR cool* OR variab*)) OR ((greenhouse* W/3 effect*) OR ((global* OR earth* OR world* OR international* OR hemisphere*) W/5 (warm* OR heat* OR cool* OR chill*)) OR ((temperature* W/5 (global* OR earth* OR world* OR international* OR hemisphere*) W/8 (increas* OR rising* OR rise* OR decreas*)).
4. Such paragraphs were defined as those conforming to the following rule: (climat* W/5 (adjust* OR catastroph* OR chang* OR cool* OR disaster* OR earth* OR heat* OR transform* OR trend* OR variab* OR warm* OR world*)) AND/OR (COP W/8 (conference OR international OR negotiat* OR summit)) AND/OR ((earth* OR global* OR hemisphere* OR international* OR world*) W/5 (chill* OR cool* OR heat* OR warm*) AND/OR (temperature* W/8 (chang* OR decreas* OR increas* OR rise OR rising OR shift*)) AND/OR (atmosph* OR carbon* OR CO2 OR Conference of Parties OR emission* OR GHG OR greenhouse OR IPCC OR Kyoto OR UNFCCC).
5. The word list used for identifying securitizing language was: armed, (armies OR army), attacks, clash*, (conflict OR conflicts), confrontation, danger*, (fear OR feared OR fears), fighting, frightening, militar*, (risk OR risks), security, soldier*, tension, threat*, (violence OR violent), (war OR wars).

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