

**How are news articles about climate change different in the American *New York Times* and in the Dutch *Volkscrant* during 1988-1997?**

Bachelor's thesis Stories in the news: Media, discourse and context

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## Abstract

This study makes a cross-cultural comparison between Dutch and American climate change coverage during the period 1988-1997. The purpose of the study was to explore whether news articles on climate change are different in the American *New York Times* and in the Dutch *Volkskrant*. Furthermore, it was investigated whether climate change coverage was influenced by different socio-cultural contexts. The results showed that the *Volkskrant* and the *New York Times* did not differ in the themes and political actors they used. Contrarily, a difference was found in the sources they used. The source ‘environmental group’ was more frequently mentioned in the *Volkskrant* than in the *New York Times*. Down’s ‘media-attention cycle’ was not clearly visible in the US. In the Netherlands an absence of this cycle was observed. The Netherlands and the US differ in Hofstede’s (1984) long-term orientation (LTO) dimension and masculinity dimension; these differences in both dimensions are also visible in climate change coverage comparing the *New York Times* with the *Volkskrant*. More cross-cultural research on climate change coverage is necessary in order to provide more insights in this area.

## Introduction

Climate change is a major problem that affects people around the globe (Brossard et al., 2004). It is provoked by various actions of people, such as the increased emissions of carbon dioxide by households. In the late 1970s, climate change was placed on the political agenda for the first time (Van der Wurff, 2016). The European Union has been involved in coping with climate change and implemented various politics in order to reduce the consequences of the issue. In order to cope with climate change on a global level, United Nations Framework Convention on Climate Change was established in 1992 (UNFCCC, n.d.). The purpose of the treaty was to reduce greenhouse gas emissions and thereby prevent unwanted effects of climate change. From 1995, annually a formal meeting is being held by the UNFCCC parties (Schmidt et al., 2013). The consequences of climate change are difficult to oversee, partly because unpredictable economic, social and technological developments must also be taken into account (Van der Wurff, 2016).

Due to the abstract nature of the issue of climate change, newspapers play an important role in communicating about the issue to the public (Van der Wurff, 2016). Newspapers are seen as the most important media sources to inform the public about the issue. To a large extent, journalists exert influence over the way the public makes sense of information about climate change (Boykoff, 2011). However, journalists have to take into account norms of accuracy, immediacy, balance, dramatization and personalization. Besides, they should consider the constraints of the news office they work for. The way the public interprets information about global warming is influenced by its emotions and cultural values (Boykoff, 2011).

Many scholars have focused on researching media coverage on a national level. Cross-cultural research on media coverage is scarce (e.g. Brossard et al, 2004; Dirikx & Gelders, 2010). Therefore, it is relevant that researchers zoom out and make cross-cultural comparisons in order to explore whether there are similarities or differences in global climate change coverage in various countries worldwide.

Brossard et al. (2004) are among the few researchers who conducted cross-cultural research on climate change coverage. In their research, US media coverage was compared to French climate change coverage during the period 1987-1997. The Brossard et al. (2004) study was used as a basis for this research. In order to provide new insights in this area, French climate change coverage is replaced by the climate change coverage of another country. A country, culturally different from the United States, was selected with the purpose to see how a similar and international issue is framed differently with regard to different socio-cultural contexts.

When selecting a country, the dimension Long Term Orientation (LTO) of Hofstede's model of national culture (1984), was taken into account. The LTO dimension captures the degree to which people feel the need to preserve connections to their past when managing present and forthcoming challenges in society, such as climate change (Hofstede, 1984). What stands out most are the scores of the Netherlands and the United States. The Netherlands score high on this dimension with 67 out of 100. Conversely, the United States score low on this dimension with 27 out of 100. This means that Dutch people can more easily adapt to new situations in society. Meanwhile, American people attach more importance to old traditions (Hofstede Insights, n.d.). The cultures also differ from one another in the masculinity dimension. The Netherlands score relatively low on this dimension with 14 out of 100. Conversely, the United States score high on this dimension with 62 out of 100. The Netherlands are considered a feminine society in which quality of life, involvement and solidarity are core concepts. Meanwhile, the US are considered a masculine society, in which people are driven by achievement, competition and success. The United States and the Netherlands are selected, because they differ substantially in these cultural dimensions, and due to these differences it might be the case that journalists from both countries report differently about climate change in newspaper articles. Hence, a cross-cultural content analysis is conducted to compare American climate change coverage and Dutch climate change coverage during the period 1988-1997.

#### *Dutch climate change coverage*

Originally, little importance was attached to research into journalism in the Netherlands. After the year 2000, journalism was settled as a research dimension at universities in the Netherlands (Pleijter, 2012). Therefore, a substantially low number of research has been done into Dutch journalistic practices and culture (e.g. Muskens, 1968; Deuze 2002). Little research has been done into Dutch climate change coverage on a cross-cultural level (e.g. Dirikx & Gelders, 2010; Schmidt et al., 2013; McCright et al., 2016).

In order to make sense of journalistic culture, Deuze (2002) made a cross-national comparison between the Netherlands, Germany, Great Britain, Australia, and the US. The term journalistic culture is defined as "the cultural diversity of values and practices of journalists, it proposes conformity between journalists on cultural identity" (Hanitzch, 2007, p. 368). National news culture is characterized by the way a story is told, the type of media, the agency, the genre and the manner in which a message is perceived by the readers (Deuze, 2002). Dutch journalists have an educational system which is characterized as theory-based learning (Deuze, 2002). Furthermore, Dutch journalists have a holistic approach when creating news articles and they work in an open work environment where tasks are not strictly divided between journalists with different functions. For Dutch journalists,

it is important to exert influence on the political agenda (Deuze, 2002). Often, Dutch journalists assign the responsibility of a problem to the government (Semetko & Valkenburg, 2000). This implies that, it is expected by the public that the Dutch government provides an answer to social issues. Additionally, Dutch journalists want to be perceived as influential and they want to bring changes about society (Muskens, 1968).

An example of a frame analysis on climate change coverage is the research conducted by Dirikx and Gelders (2010). The concepts selection and salience are essential for framing. First, important information about the issue is selected, then the information is made salient by the journalist (Entman, 1993). Hence, framing ensures that the problem is defined, causes are diagnosed, moral judgments are made and remedies are suggested (Trumbo, 1996). Dirikx and Gelders (2010) investigated whether the French quality newspapers *le Monde* and *le Figaro* used different climate change coverage on the occurring United Nation Conferences of Parties (COP), than the Dutch quality newspapers the *Volkscrant* during 2001-2007. In the research, the following frames established by Semetko and Valkenburg (2000) were used: responsibility frame, economic consequence frame, conflict frame, human interest frame and morality frame. In the responsibility frame, the responsibility of the problem is blamed on politics, groups, or a singular person. In the economic consequence frame, the economic consequences that climate change has on people are accentuated. In the conflict frame, conflicting viewpoints between people are emphasized. In the human interest frame, the issue of global climate change is personalized. In the morality frame, a religious viewpoint of the problem is accentuated. The morality frame could not be determined as a steady frame in the investigation because this frame conflicts with objectivity of the news (Dirikx & Gelders, 2010). The results show that the French and Dutch newspapers used the economic consequence frame and the responsibility frame more frequently than the the conflict frame and the human interest frame.

#### *American climate change coverage*

An important protagonist in international climate policy is the United States (Van der Wurff, 2016). The American climate policy is characterized by the belief in natural adaptability. There is uncertainty about what the effects of climate change will be in the future and about the costs involved in combating climate change (Van der Wurff, 2009). The United States have a leading role in the United Nations, and emphasize that climate policy is meaningless if developing countries do not participate (Van der Wurff, 2016). The issue of climate change must be tackled jointly to achieve the best result. Conversely, in the United States there is a lack of national support on environmental issues (Hassol & Udall, 2003). The involvement of inhabitants to environmental problems is present, which

is, for example, visible in the reduction of carbon dioxide emissions by individual households; however, national support of the government is absent (Hassol & Udall, 2003).

A considerable amount of research has been done into American climate change coverage in news articles (e.g. McComas & Shanahan, 1999; Trumbo, 1996). Conversely, little research has been done into climate change coverage on a cross-cultural level (e.g. Brossard et al., 2004).

In order to make sense of journalistic culture, Deuze (2002) made a cross-national comparison between the Netherlands, Germany, Great Britain, Australia, and the US. Deuze (2002) showed that the United States have a journalistic educational system which is characterized as theory-based learning. When American journalists create news articles, tasks are strictly divided between journalists. Practically, each journalist has its own task and does not perform a broad variety of jobs (Deuze, 2002). For American journalists, journalistic objectivity is important (Tuchman, 1978). Journalists are expected to address the opinions of more than one person in their articles (LaMay, 1991). This means that they are expected to give equal weight to small scientific groups and to large scientific groups.

The first study into American climate change is the research conducted by McComas and Shanahan (1999). A content analysis was conducted on environmental problems media coverage in the newspapers the *New York Times* and in the *Washington Post*. McComas and Shanahan (1999) investigated whether narratives published in newspapers influenced Downs's 'media-attention cycles' (1972). The 'media-attention cycle' model of Downs (1972), explains the increasing and decreasing attention of the public to an issue, such as global warming. Attention can be defined as the time a person invests when thinking about a problem (Newig, 2004). In the research, the US 'media-attention cycles' on issues were investigated (McComas & Shanahan, 1999). The attention of the readers to problems like global climate change passes through the following stages: (1) pre-problem stage, (2) avidity to resolve the problem quickly, (3) awareness of the costs involved in unriddling the issue, (4) a decrease of interests of the readers, (5) post-problem stage (Downs, 1972). In the first stage, only a few readers of the news article pay attention to the problem; whereas, there is a lack of awareness about the issue among the majority of the readers. In the second stage, important events attract the attention of the readers and they think about how to solve the problem. In the third stage, readers are aware of the costs involved in unriddling the issue. In the fourth stage, readers realize that it is difficult to solve the problem and they lose their interests to the problem. In the last stage, readers do not pay attention to the issue anymore (Downs, 1972). McComas and Shanahan (1999) found that in American news articles emphasis is placed on conflicts between politicians, the threats of climate change, and scientific contradictions. American journalists from the *New York Times* wrote the issue of global climate change as "tensive news", using story-like elements in order to preserve the attention

of the readers and to catch their emotions (McComas & Shanahan, 1999). What is perceived as exciting or interesting news is influenced by different cultural contexts.

The Brossard et al. (2004) study on climate change coverage in the American newspaper *New York Times* and in the French newspaper *Le Monde* during 1987-1997, was used as a basis for this research. From the year 1988, journalists started to write about the effects of global climate change (Brossard et al., 2004). The information was new to the public; therefore the attention to the issue was high. When the anxiety level for the consequences of climate change diminished and when the issue was mentioned frequently, the attention to the issue decreased (Brossard et al., 2004). In the Brossard et al. (2004) study, Down's 'media-attention cycle' (1972) was visible in the US during the period 1987-1997. The attention of the public to the global climate change issue peaked around 1980, and after that year, there was a decrease in attention. Conversely, such a pattern was not visible in France. In the French newspaper *Le Monde*, peaks appeared in 1989, 1992, 1995 and 1997. In those years, there were international climate change gatherings in Den Haag (1989), Rio de Janeiro (1992), Berlin (1995) and Kyoto (1997). Hence, *Le Monde* attached greater importance to international relations than the *New York Times* did (Brossard et al., 2004). In *New York Times* articles, emphasis was placed on conflicts between politicians, consequences of climate change, and scientific contradictions (Brossard et al., 2004). In summary, in France, the interest in climate change news is determined by international relations; in the US through the 'media-attention cycle', which can apply to all subjects (and therefore also to the issue of climate change). These findings suggest that the media coverage of the issue of climate change is influenced by journalistic practices embedded in a particular cultural context (Brossard et al., 2004).

Therefore, it is relevant that more cross-cultural research is done on Downs' 'media-attention cycle' (1972) model, considering the influence of different national cultures (Brossard et al., 2004). Taking this into account, it is interesting to investigate if cyclical patterns in media coverage are visible in the Netherlands during the period 1988-1997.

Based on the literature review, the following research questions are drawn:

RQ 1: How are news articles on climate change different in the American *New York Times* and in the Dutch *Volkscrant* during 1988-1997?

Subquestion 1: How do the *New York Times* and the *Volkscrant* differ in the themes they use when reporting about climate change?

Subquestion 2: How do the *New York Times* and the *Volkscrant* differ in the sources they use when reporting about climate change?

Subquestion 3: How do the *New York Times* and the *Volkscrant* differ in the political actors they use when reporting about climate change?

Subquestion 4: To what extent is Down's 'media-attention cycle' visible in the Netherlands and in the United States?

RQ 2: To what extent is climate change coverage influenced by different socio-cultural contexts?



## Method

### *Sample*

The aim of this research was to explore if the news coverage on climate change differs in the United States and in the Netherlands during the period 1988-1997. The analysis focused on news articles written by American journalists for the *New York Times* and news articles written by Dutch journalists for the *Volkscrant* during the period 1988-1997. The year 1988 was chosen as the beginning of the analysis because in that year journalists started to write about the issue of global climate change (Brossard et al., 2004). The *Volkscrant* was chosen because it is a daily and a quality newspaper like the *New York Times*. Furthermore, the *Volkscrant* and the *New York Times* have similar socio-political orientations. Elite newspapers were selected because they provide more information than other forms in the media landscape. When collecting samples of the *New York Times* and the *Volkscrant*, the same selection procedures were applied.

### *New York Times sample*

For this study, the archive LexisNexis was used in order to collect *New York Times* articles on global warming for the period 1988-1997. Articles whereby ‘climate change’ or ‘global warming’ appeared in the article text (title, lead paragraph or/and the body) were collected. In total, an amount of 1672 newspaper articles appeared in LexisNexis. In order to collect a representative sample, based on numbers generated by the program Research Randomizer, six news articles from the *New York Times* were randomly selected for each year for the period 1988-1997. This yielded in a sample of 60 news articles.

An important selection criterium for each article is having climate change as main subject. After looking into more detail to each of the 60 articles, two articles did not meet this criterium. Therefore, these articles were excluded from the sample. In order to ensure an equal amount of articles per newspaper, these two articles were replaced by two randomly selected articles with climate change as its main subject. The final sample contained 60 articles which met all the selection criteria.

### *Volkscrant sample*

By using the archive LexisNexis, *Volkscrant* articles on global climate change for 1988-1997 were selected. Articles whereby ‘klimaatverandering’ (climate change) or ‘opwarming van de aarde’ (global warming) appeared in the article text (title, lead paragraph or/and the body) were collected. Nevertheless, there were no articles found for the period 1988-1994 in LexisNexis. Therefore, the research was expanded to the archive Delpher. Subsequently, *Volkscrant* articles for the period 1988-

1994 were selected from Delpher. In total, an amount of 270 articles were selected from both archives. In order to collect a representative sample, based on the program Research Randomizer, six articles from the *Volkskrant* were randomly selected for each year. This resulted in a final sample of 60 articles for the *Volkskrant*.

### *Coding instrument*

The Brossard et al. (2004) study was used as a basis for this research. Brossard et al. (2004) investigated the themes, sources and political actors mentioned in the news articles on climate change of the *New York Times* and *Le Monde* during 1987-1997. In the Brossard et al. (2004) study, the different themes were coded as ‘not present’, ‘present’ or ‘outstanding focus, or appearing in the lead’ (three levels of presence). The different sources were coded as ‘absent’ or ‘present’ (two levels of presence). Subsequently, the political actors mentioned in the articles were listed. When participants coded the themes, the division between the three levels of presence was not clear, which may have influenced the results (Brossard et al., 2004). Furthermore, there was no clear coding scheme for the variable political actors.

In order to conduct a more consistent analysis, an updated version of the coding scheme of the Brossard et al. (2004) study was applied in this study. For each news article, it was indicated which of the following themes were noticed by the journalist: (a) new evidence; (b) scientific background; (c) consequences; (d) economics; (e) domestic politics; (f) international relations; and (g) current weather. In order to ascertain the significance of each theme, the themes were classified as ‘present’ (1) or ‘not present’ (0) in the news article. The themes are stated and elucidated in Table 1. Furthermore, it was coded who was mentioned in the news articles. The sources (a) academic/researcher; (b) inhabitant; (c) business association; (d) economists; (e) unidentified experts; (f) independent researchers; (g) governmental sources; and (h) environmental association, were coded as ‘present’ (1) or ‘not present’ (0) in the news articles. The sources are presented in Table 2. Moreover, political actors mentioned in the article were coded. The political actors; (a) National government; (b) European Union; and (c) United Nations, were coded as ‘present’ (1) or ‘not present’ (0) in the news article. The political actors identified are presented in Table 3.

Table 1. *Themes Typology taken from Brossard, Shahanah, & McComas (2004, p. 368).*

<i>Themes</i>	
New evidence or research presented	Announcement of a new government study, a new scientific report, a new environmental report
Scientific background	General scientific and/or technological background of an issue (e.g., descriptions of previous research, recapitulation of “known” results and findings)
Consequences	Consequences of global warming – bad or good (e.g., environmental, social, health), worst or best-case scenarios, predictions and projections
Economics	Costs of remedy or solutions to counter global warming effects
Domestic politics	Debate over environmental policy, laws, regulations, political speeches, campaigns, etc.
International relations	Summits, treaties, disputes, UN-sponsored research
Current weather	Abnormal patterns, severe storms, draught

Table 2. *Sources Typology adapted from Brossard, Shahanah, & McComas (2004, p 367)*

<i>Sources</i>	
Academic researcher	A researcher who works at a university
Inhabitant	A person that lives in a particular place
Business/industry group	Classification of a group of companies based on the same line of business
Economists	A specialist in the economic sector
Unidentified expert	Information about an expert who is mentioned in the article is missing
Independent research group	Researchers that conduct research independently of organizations and universities
Governmental sources	The governing body of a state
Environmental group	A group who works toward protecting the environment from pollution

Table 3. *Political Actors Typology based on the study conducted by Brossard, Shahanah, & McComas (2004, p 368)*

<i>Political actors</i>	
National government	A government formed by a coalition of parties that controls a nation
European Union	Organization of European countries which governs common social, economic and security policies
United Nations	International organization which promotes cooperation, security and peace among the countries that are part of it (e.g. treaties and conferences of the United Nations)

#### *Procedure and statistical treatments*

The first and second coder were both native speakers of Dutch and fluent in English. They coded the news articles from the *New York Times* and the *Volkscrant*. Due to the feasibility of the study, the second coder coded considerably less articles than the first coder did. Cohen's Kappa was used to measure the intercoder reliability between the two coders. The intercoder reliability for 'all variables' was moderate:  $\kappa = .66, p < .001$ . For the variable 'themes', the intercoder reliability was satisfactory:  $\kappa = .76, p < .001$ . The intercoder reliability for the variable 'sources' was moderate:  $\kappa = .53, p < .001$ . For the variable 'political actors', the intercoder reliability was moderate:  $\kappa = .56, p < .001$ . In Table 4, the intercoder reliability results are shown.

Table 4. Intercoder reliability for all variables and per variable

	$\kappa$	% Agreement	Strength of Agreement
All variables	.662	83.7	Moderate
Themes	.757	88.1	Satisfactory
Sources	.526	80.2	Moderate
Political actors	.563	83.3	Moderate

The first and second coders coded the variables and inserted the data in a Microsoft Office Excel file. Then, the Excel file was transferred to a SPSS file to conduct statistical analysis of the data. In order to research to what extent the *Volkscrant* and the *New York Times* differ in the 'themes', 'sources' and 'political actors' used, a Chi-square analysis was conducted for each of these three variables (Subquestion 1-3).

Subsequently, for the American *New York Times* and the Dutch *Volkscrant*, the total number of articles published on climate change per year was depicted in a graph in order to investigate whether Down's 'media-attention cycle' was visible in the United States and in the Netherlands during 1988-1997 (Subquestion 4). The number of articles on climate change per year was not based on the corpus of randomly selected news articles, but on all articles of the *New York Times* and the *Volkscrant* that appeared in the archives LexisNexis and Delpher during 1988-1997. This means that 1672 articles for the *New York Times* and 270 articles for the *Volkscrant* are presented in Figure 1.

Finally, a qualitative content analysis approach was used with the purpose to elucidate how news coverage on climate change is influenced by different socio-cultural contexts (RQ 2). The qualitative analysis resulted from a literature review of Hofstede's (1984) cultural dimensions. As mentioned in the literature review, the Netherlands and the United States differ considerably in the LTO dimension and the masculinity dimension (Hofstede, 1984). The Netherlands are considered long-term oriented and a feminine society, while the US are considered short-term oriented and a masculine society (Hofstede, 1984). In the qualitative analysis, it was investigated whether the LTO dimension and masculinity dimension of Hofstede (1984) were reflected in the Dutch climate change coverage and the American climate change coverage.

For the qualitative analysis, one news article of the *Volkscrant* and one news article of the *New York Times* were selected. In order to make a valid comparison between these news articles, they need to have the same theme. The variable 'theme' better represents the topic of the article than the variables 'sources' and 'political actors' do.

To select one appropriate article meeting these criteria for the *Volkscrant* and one article for the *New York Times* the rank order was used. Taking into account the rank order, consisting of eight themes, a theme that was frequently reported in both newspapers was chosen. The rank order for themes in the *Volkscrant* demonstrates that the theme 'domestic politics' was mentioned most frequently (Appendix A). When looking at the rank order of themes in the *New York Times*, domestic politics ranked third (Appendix B). The rank order scores of this theme (domestic politics) are therefore comparable between the two newspapers. From the 45 *Volkscrant* articles with the theme 'domestic politics' present, one article was randomly selected using the program Research Randomizer (Appendix C). From the 32 *New York Times* articles with the theme 'domestic politics' present, one article was randomly selected using Research Randomizer (Appendix D).

Using a qualitative analysis approach, the content of the news article of the *Volkscrant* and the content of the news article of the *New York Times* was analyzed. The analysis was based on the LTO dimension and masculinity dimension proposed by Hofstede (1984). In general, a broad range

of characteristics can be ascribed to these two dimensions. This study focused on the climate change related characteristics of these two dimensions, as presented in Appendix E. The words, phrases or related pair of words that are to some extent linked to characteristics of the LTO dimension or the masculinity dimension were selected from the news article and qualitatively analyzed.

## Results

### Quantitative analysis

To answer the first research question concerning the difference in climate change coverage between the Dutch *Volkskrant* and the American *New York Times*, during 1988-1997, Chi-square analyses were conducted. For each variable (themes, sources and political actors), a Chi-square analysis was performed.

A Chi-square analysis did not show a significant relation between type of newspaper (*Volkskrant* or *New York Times*) and the variable ‘themes’ ( $\chi^2(6) = 4.45, p = .616$ ) (Subquestion 1). The results obtained from the Chi-square analysis are shown in Table 5.

Table 5. Chi-square analysis for themes in samples of the *Volkskrant* and the *New York Times*

Themes	<i>Volkskrant</i> (1)	<i>New York Times</i> (2)	$\chi^2$ (df = 6)	<i>p</i>
	<i>n</i> (s.r.)	<i>n</i> (s.r.)		
			4.45	.616
New evidence	25 (-0.60)	30 (0.60)		
Scientific background	38 (-0.60)	44 (0.60)		
Consequences	45 (0.00)	43 (0.00)		
Economics	25 (-0.50)	29 (0.50)		
Domestic politics	45 (0.90)	32 (-0.90)		
International relations	37 (0.50)	29 (-0.50)		
Current weather	34 (0.30)	29 (-0.30)		

Note. s.r. = standardized residual.

A Chi-square test showed a significant relation between type of newspaper (*Volkskrant* or *New York Times*) and the variable ‘sources’ ( $\chi^2(7) = 16.66, p = .020$ ) (Subquestion 2). What stands out most, is the difference between the *Volkskrant* and the *New York Times* considering the source ‘environmental group’. A standardized residual of 1.80 for the *Volkskrant* and a standardized residual of -1.90 for the *New York Times* was found for the source ‘environmental group’. Although these standardized residuals differ substantially, they are not considered significant as they do not exceed the limits of -1.96 and 1.96. Also, ‘environmental groups’ were more frequently mentioned in news articles of the *Volkskrant* (19.1%) than in news articles of the *New York Times* (8.1%). The percentages and rank order of the variables are presented in Appendix A (*Volkskrant*) and Appendix

B (*New York Times*). The results of the Chi-square analysis for the variable ‘sources’ are shown in Table 6.

Table 6. Chi-square analysis for sources in samples of the *Volkskrant* and the *New York Times*

Sources	<i>Volkskrant</i> (1)	<i>New York Times</i> (2)	$\chi^2$ (df = 7)	<i>p</i>
	<i>n</i> (s.r.)	<i>n</i> (s.r.)		
			16.66	.020
Academic researcher	12 (-1.30)	22 (1.40)		
Inhabitants	18 (0.10)	16 (-0.10)		
Business group	21 (0.20)	18 (-0.20)		
Economists	4 (-0.30)	5 (0.30)		
Unnamed expert	7 (1.10)	2 (-1.10)		
Independent researcher	25 (-1.30)	38 (1.30)		
Government	40 (0.20)	35 (-0.20)		
Environmental group	30 (1.80)	12 (-1.90)		

*Note.* s.r = standardized residual.

A Chi-square test was conducted in order to see whether there are significant relations between type of newspaper (*Volkskrant* or *New York Times*) and the variable ‘political actors’ (Subquestion 3). A Chi-square test did not show a significant relation between type of newspaper and the variable ‘political actors’ ( $\chi^2$  (2) = 5.88, *p* = .053). Table 7 shows the results obtained from the Chi-square analysis.

Table 7. Chi-square analysis for political actors in samples of the *Volkskrant* and the *New York Times*

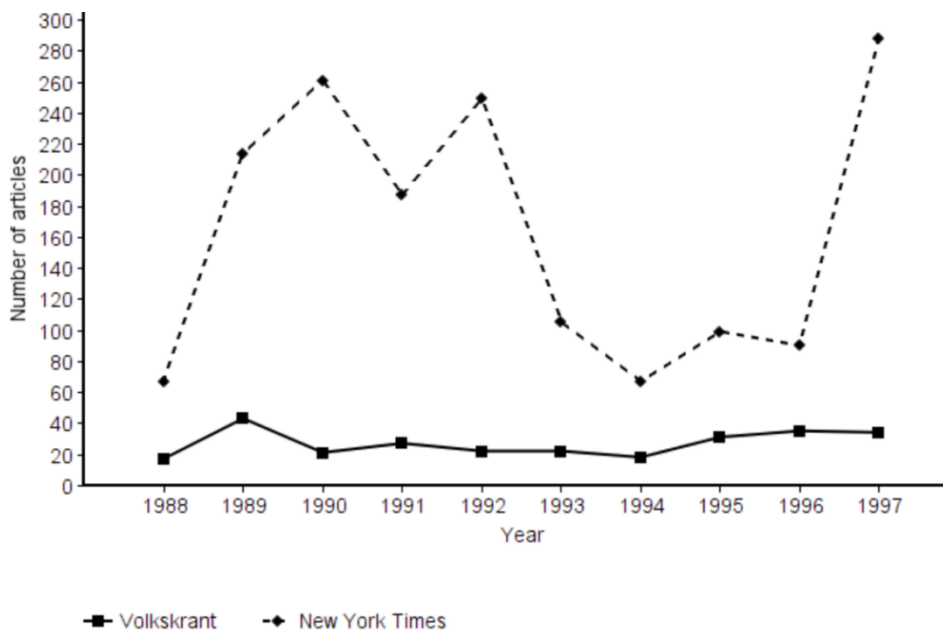
Political actors	<i>Volkskrant</i> (1)	<i>New York Times</i> (2)	$\chi^2$ (df = 1)	<i>p</i>
	<i>n</i> (s.r.)	<i>n</i> (s.r.)		
			5.88	.053
National government	39 (0.50)	31 (-0.50)		
European Union	15 (0.90)	8 (-0.90)		
United Nations	15 (-1.30)	26 (1.40)		

*Note.* s.r. = standardized residual.



In order to investigate to what extent Down’s ‘media-attention cycle’ was visible in the Netherlands and in the US (Subquestion 4), media attention was measured by the total number of articles published in a given year. As shown in Figure 1, the number of articles published per year on climate change is much higher for the American *New York Times* than for the Dutch *Volkskrant*. A considerably high peak is visible for the *New York Times* in 1989. Afterwards, the number of articles published in the *New York Times* declined. On the other hand, moderate increases and decreases of the number of news articles per year are visible for the *Volkskrant*.

Figure 1. Number of articles on climate change in the *New York Times* and *Volkskrant* between 1988 and 1997.



As shown in Figure 1, the number of articles published per year on climate change is much higher for the American *New York Times* than for the Dutch *Volkskrant*. Three considerably high peaks are visible for the *New York Times*, in 1989, in 1992 and in 1997. A substantial decline can be seen between the year 1992 and the year 1994. On the other hand, moderate increases and decreases of the number of news articles per year are visible for the *Volkskrant*.

### *Qualitative analyses*

Qualitative research has been done concerning the influence of different socio-cultural contexts on the way climate change is covered in the *Volkscrant* and in the *New York Times* (RQ 2). In this paragraph the coverage of climate change in a *Volkscrant* article and in a *New York Times* article is analyzed qualitatively using Hofstede's LTO dimension and masculinity dimension. In Appendix E, characteristics of these dimensions are presented. The *Volkscrant* article is presented in Appendix C and the *New York Times* article is presented in Appendix D.

#### *Long-term orientation versus short-term orientation*

The *Volkscrant* article focuses on an environmental campaign for raising more public awareness of climate change. The news article states that Minister Alders of Environmental Management wants to launch a campaign of a few years, in which citizens are told what environmentally friendly behavior looks like. In the following example, obtained from the *Volkscrant* article, an explanation of the campaign is provided.

#### Example 1

“Het moet een uitgerekte voorlichtingsactie van van enkele jaren worden, waarin burgers wordt verteld hoe milieuvriendelijk gedrag er dag-in-dag-uit uitziet [1]. Alders en collega-ministers willen het publiek stelselmatig opporren, beïnvloeden en aanzetten tot milieubewust gedrag [2] (Campagne moet milieubewustzijn publiek vergroten, October 4, 1990).”<sup>1</sup>

In this example, the most striking parts are “enkele jaren” (a few years) [1], and “dag-in-dag-uit” (on a daily basis) [1] which indicate the approximate length of the campaign. This example suggests that the government wants to teach citizens environmentally conscious behavior in order to ameliorate the living environment in the future, which seems related to a long-term orientation. The following example also suggests that the campaign is long-term oriented.

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<sup>1</sup> “It should be a stretched information campaign of a few years, in which citizens are told how daily environment-friendly behavior looks like. Alders and fellow ministers want to systematically inspire, influence and encourage environmentally conscious behavior (Campagne moet milieubewustzijn publiek vergroten, October 4, 1990).”

Example 2

“Normen en waarden plug je er niet zomaar in [1]. In golven willen ze de mensen bereiken [2]. Per afzonderlijk thema ook, zoals klimaatverandering, energiegebruik, afval, vervoer en verdroging [3](Campagne moet milieubewustzijn publiek vergroten, October 4, 1990).”<sup>2</sup>

The government wants to make citizens aware of environmental problems by teaching them norms and values about environmentally conscious behavior [1]. This implies that the government prepares the citizens for the future. The part “In golven willen ze de mensen bereiken” [2] sounds like the government wants to take her time to reach the citizens. These examples suggest that the Dutch climate change campaign is long-term oriented (Hofstede, 1984).

The *New York Times* article focuses on the role of the United States in the binding World Pact to combat global warming. In the following example, the changed position of the US in dealing with the climate change issue is mentioned.

Example 3

“Although the Administration has devised no specific target or timetable, its position signals a more aggressive campaign against climate change than the voluntary measures it endorsed in the past, and puts it on a course that promises to be politically difficult [1] (Cushman, July 17, 1996).”

The part “no specific target or timetable” [1], suggests that the aggressive campaign lacks a clear goal and time path. This points in the direction of a short-term oriented campaign that mainly focuses on the present. In the *New York Times* article there are two clear references to the climate change policy of the past; the section ‘the voluntary measures it endorsed in the past’ [1] is one of these two examples. These references indicate that the American climate change policy is short-term oriented (Hofstede, 1984).

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<sup>2</sup> “It is not easy to imprint norms and values. They want to reach people gradually per individual theme, such as climate change, energy use, waste, transport and drought (Campagne moet milieubewustzijn publiek vergroten, October 4, 1990).”

*Masculinity versus femininity*

The *Volkscrant* article illustrates that Minister Alders of Environmental Management designed a campaign in order to raise public awareness of the issue of climate change. Example 4 illustrates that the government wants to involve the public in the climate change issue through an information campaign.

Example 4

“Het moet een uitgerekte voorlichtingsactie van enkele jaren worden, waarin burgers wordt verteld hoe milieuvriendelijk gedrag er dag-in-dag-uit uitziet [1] (Campagne moet milieubewustzijn publiek vergroten, October 4, 1990)”<sup>3</sup>

Example 4 emphasizes that due to the information gatherings people will learn more about daily environmentally friendly behavior. The involvement of people is a core concept of the campaign. This is illustrated by the parts “voorlichtingsactie” [1] and “burgers wordt verteld” [1].

To raise public awareness to the issue of climate change, the government needs to interact with the citizens. This interaction seems relationship oriented; one of the feminine characteristics described by Hofstede (1984). These characteristics are presented in Appendix E. All in all, this supports the view that the Netherlands is considered a feminine society (Hofstede, 1984).

In the *New York Times*, emphasis is placed on the desired leading position the US want to have in combatting climate change, as shown in example 5.

Example 5

“Saying that we want to have a target that is binding is a clear indication that the United States is very serious about taking steps and leading the rest of the world [1] (Cushman, July 17, 1996)”.

The image other countries have of the US seems to be important for the US. Apparently, their ego is a meaningful for them.

Example 6 points out that the US are only interested in goals that can be achieved. This implies that achievement, a characteristic of Hofstede’s (1984) masculinity dimension (Appendix E), is an important aspect to them.

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<sup>3</sup> “It should be a stretched information campaign of a few years, in which citizens are told how daily environment-friendly behavior looks like (Campagne moet milieubewustzijn publiek vergroten, October 4, 1990)”

Example 6

“We are not interested in grand rhetorical goals that are impossible to realize, we want the negotiations to focus on outcomes that are real and achievable [1] (Cushman, July 17, 1996)”.

In summary, findings indicate that the *Volkskrant* article on climate change reflects a long term orientation and feminine characteristics. On the other hand, the news article of the *New York Times* on climate change reflects a short-term orientation and masculine characteristics.

## Conclusion and discussion

The purpose of the study was to determine to what extent the Dutch *Volkscrant* and the American *New York Times* differ in climate change coverage during 1988-1997. In order to answer the research questions, a combination of a quantitative approach (RQ 1) and a qualitative approach (RQ 2) was used. This study investigated whether the *Volkscrant* and the *New York Times* differ in the themes, sources and political actors they use when reporting about climate change (Subquestion 1-3). Furthermore, it was investigated if Down's 'media-attention cycle' (1972) was visible in the US and in the Netherlands (Subquestion 4). Subsequently, a qualitative approach was used in order to investigate how climate change coverage is influenced by different socio-cultural contexts (RQ 2).

It was found that the *Volkscrant* and the *New York Times* significantly differ in the sources they use when writing about climate change. When comparing each source between these newspapers, the largest difference was found for the source 'environmental groups'. Environmental groups are more frequently mentioned in *Volkscrant* articles in comparison with *New York Times* articles (Subquestion 2). No differences between these two newspapers were found for 'themes' and 'political actors' (Subquestion 1 and 3). A possible explanation for this might be that the *Volkscrant* and the *New York Times* have similar socio-political orientations. Besides, the *Volkscrant* and the *New York Times* are daily newspapers and elite newspapers. This could explain the similar patterns in the reporting of 'themes' and 'political actors'.

The research showed that Down's 'media-attention cycle' (1972) was not clearly visible in the United States. Due to the number of articles published in the year 1992, the pattern of the 'media-attention cycle' was interrupted. This is not in accordance with the results of other studies (e.g. Brossard et al., 2004; McComas & Shanahan, 1999). The difference with the findings of Brossard et al. (2004) might be explained by the substantial considerably larger sample size they used. The difference with the findings of McComas & Shanahan (1999) can be subscribed to the fact that narratives were analyzed instead of news articles. The 'media-attention cycle' was absent in the Netherlands.

Findings of the qualitative in-depth study indicate that the *Volkscrant* article reflected a long-term orientation by giving future related time indications. Characteristics of a feminine society (e.g. involvement of people) were found in the *Volkscrant* article. Meanwhile, in the news article of the *New York Times* features corresponding to a short-term orientation were present (e.g. by referring to the past). Characteristics of a masculine society (e.g. by referring to achievement) emerged in the *New York Times* article. Additionally, the article points out that the US want to be a protagonist in fighting against climate change at an international level (characteristic of masculinity dimension). The findings

of the qualitative analysis coincide with the scores of the Netherlands and the US on Hofstede's (1984) LTO dimension and masculinity dimension.

The limitations of this study were partly linked to the little amount of time available to conduct the research. Because of this only one national newspaper per country could be compared. The sample size of the *Volkskrant* and *New York Times* articles for the quantitative analysis was relatively small in comparison with other studies (e.g. Brossard et al., 2004). A bigger sample size would have increased the reliability of the results. The intercoder reliability for 'all variables', 'sources' and 'political actors' was below satisfying. A higher intercoder reliability score would have incremented the validity of the research. This could have been achieved by conducting a coder training. A bias in selection of the articles by LexisNexis and Delpher could have occurred due to the search strategy. The search terms 'global warming' or 'climate change' were used and these terms do not incorporate all climate change related news articles. Besides, the scope of the qualitative analysis was limited in terms of number of articles analyzed. Only one news article of the *Volkskrant* and only one news article of the *New York Times* were analyzed. Therefore the results found in this qualitative analysis have to be interpreted with prudence.

For future research it is recommended to expand the number of articles of the quantitative study and the qualitative in-depth study, in order to increase the reliability of the results. The coding of the quantitative analysis should be compiled by different researchers in order to create a more consistent coding scheme. Such a scheme will help to obtain more cohesive results among different researchers. This will lead to more valid research and this is useful for follow-up studies.

Newspapers are considered as the most important media sources to inform the public about the climate issue (Van der Wurff, 2016). In reviewing the data on climate change coverage in news articles, little cross-cultural research has been performed in this area. The findings of this study contribute to the current literature concerning climate change coverage. The qualitative research has enhanced the understanding of the influence of different socio-cultural contexts on climate change coverage in the news. More-cross cultural research on climate change coverage is desired in order to provide more insights into this area.

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## Appendix A

### Rank order of the variables for *Volkskrant*

Table 1. *Rank order of the different themes mentioned in the Volkskrant articles*

<i>Themes</i>	<i>n</i>	<i>M</i>	<i>SD</i>	% within Newspaper
Domestic politics	45	0.75	0.43	18.1
Consequences	45	0.75	0.43	18.1
Scientific background	38	0.63	0.48	15.3
International relations	37	0.62	0.49	14.9
Current weather	34	0.57	0.50	13.7
New evidence	25	0.42	0.49	10.0
Economics	25	0.42	0.49	10.0

Table 2. *Rank order of the different sources mentioned in the Volkskrant articles*

<i>Sources</i>	<i>n</i>	<i>M</i>	<i>SD</i>	% within Newspaper
Government	40	0.67	0.47	25.5
Environmental group	30	0.50	0.50	19.1
Independent researcher	25	0.42	0.49	15.9
Business group	21	0.35	0.48	13.4
Inhabitants	18	0.30	0.46	11.5
Academic researcher	12	0.20	0.40	7.6
Unnamed expert	7	0.12	0.32	4.5
Economists	4	0.07	0.25	2.5

Table 3. *Rank order of the different political actors mentioned in the Volkskrant articles*

<i>Political actors</i>	<i>n</i>	<i>M</i>	<i>SD</i>	% within Newspaper
National government	39	0.65	0.48	56.5
European Union	15	0.25	0.43	21.7
United Nations	15	0.25	0.43	21.7

**Appendix B**

**Rank order of the variables for *New York Times***

Table 1. *Rank order of the different themes mentioned in the New York Times articles*

<i>Themes</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>% within Newspaper</i>
Scientific background	44	0.73	0.44	18.6
Consequences	43	0.72	0.45	18.2
Domestic politics	32	0.53	0.50	13.6
New evidence	30	0.50	0.50	12.7
Economics	29	0.48	0.50	12.3
International relations	29	0.48	0.50	12.3
Current weather	29	0.48	0.50	12.3

Table 2. *Rank order of the different sources mentioned in the New York Times articles*

<i>Sources</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>% within Newspaper</i>
Independent researcher	38	0.63	0.48	25.7
Government	35	0.58	0.49	23.6
Academic researcher	22	0.37	0.48	14.9
Business group	18	0.30	0.46	12.2
Inhabitants	16	0.27	0.44	10.8
Environmental group	12	0.20	0.40	8.1
Economists	5	0.08	0.28	3.4
Unnamed expert	2	0.03	0.18	1.4

Table 3. *Rank order of the different political actors mentioned in the New York Times articles*

<i>Political actors</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>% within Newspaper</i>
National government	31	0.52	0.50	47.7
United Nations	26	0.43	0.50	40.0
European Union	8	0.13	0.34	12.3

## Appendix C

### Newspaper article: *Volkskrant*

#### **Campagne moet milieubewustzijn publiek vergroten**

4<sup>th</sup> of October 1990

DEN HAAG — Minister Alders van Milieubeheer wil het grote publiek bestoken met een “draaggolfcampagne”. Het moet een uitgerekte voorlichtingsactie van enkele jaren worden, waarin burgers wordt verteld hoe milieuvriendelijk gedrag er dag-in-dag-uit uitziet. Alders en collega-ministers willen het publiek stelselmatig opporren, beïnvloeden en aanzetten tot milieubewust gedrag.

Normen en waarden plug je er niet zo maar in. In golven willen ze de mensen bereiken. Per afzonderlijk thema ook, zoals klimaatverandering, energiegebruik, afval, vervoer en verdroging. Alders heeft bij het thema energiebesparing de Nutsbedrijven ingeschakeld. De consument kan daar voor nader advies terecht. Minister Andriessen van Economische Zaken had het onlangs al in de Tweede Kamer gezegd: Het is mijn ideaal dat binnen één of twee jaar iemand van het gasbedrijf langskomt bij de consument. Die vraagt of hij even binnen mag kijken om te zien of er wellicht tips te geven zijn over zuiniger energiegebruik.

Uit eerder onderzoek bleek dat de consument geen al te hoge pet op heeft van de overheid als het om het goede voorbeeld gaat. Bij Milieudefensie moet men lachen om de minister van Economische Zaken. Woordvoerder Schone: In huishoudens kan 20 procent energie bespaard worden door het juiste gedrag van mensen, maar 80 procent van de besparing is het gevolg van technische maatregelen. Die laatste hebben de consumenten niet in de hand. Wel de minister van Economische Zaken. Hij kan productvoorschriften geven en toestellen introduceren die zuinig in het energiegebruik zijn.

Natuurlijk is Milieudefensie niet tegen de campagne. Maar ook Alders weet drommels goed dat zijn staatssecretaris Heerma besparing in huishoudens kan afdwingen door bouwvoorschriften, die vele malen meer effect hebben op het energiegebruik dan de inspanning van de individuele consument. We hebben de indruk dat Alders, Andriessen en Heerma zich verschuilen, en dat voorlichting in de plaats van beleid komt.

De draaggolfcampagne kan natuurlijk niet zonder tv. Bekende Nederlanders dragen in tv-spotjes hun zorg over het milieu uit. De milieuorganisaties, die informeel over de campagne zijn ingelicht, hebben wel gewaarschuwd voor bekende voetballers die een spaarlampje indraaien maar vervolgens vele uren rond de wereldbol vliegen. Dat zou een vreemde indruk kunnen wekken.

De Consumentenbond zet vraagtekens bij de zoveelste voorlichtingscampagne, ook al is deze nadrukkelijk gericht op langdurige beïnvloeding en gedragsverandering van de consument: Volgens ons moet de consument concrete faciliteiten aangeboden krijgen. Bijvoorbeeld een ophaaldienst voor klein chemisch afval. Mensen die buitenshuis werken, lopen namelijk geheid de chemocar mis, die tijdens kantooruren op de hoek van een bepaalde straat staat.

## Appendix D

### Newspaper article: *New York Times*

#### **In Shift, U.S. Will Seek Binding World Pact to Combat Global Warming**

17<sup>th</sup> of July 1996

For the first time, the United States will seek a binding international agreement to reduce the kinds of air pollution, chiefly from burning fossil fuels, that threaten to warm the global climate, Administration officials said today. Endorsing the view that the buildup of so-called greenhouse gases in the atmosphere, mainly carbon dioxide, is probably already beginning to warm the planet, the Administration will urge the world's nations to adopt, by the end of next year, "realistic, verifiable and binding" targets for reversing the trend.

Although the Administration has devised no specific target or timetable, its position signals a more aggressive campaign against climate change than the voluntary measures it endorsed in the past, and puts it on a course that promises to be politically difficult. Environmentalists praised the new approach, but officials of the energy industry reacted skeptically, although they said the impact of the plan would depend on the specific goals, which have not been spelled out.

The United States, with its huge appetite for energy, burns more fossil fuels than any other country in the world and its output of greenhouse gases has continued to rise despite conservation measures. Proposals for the stringent measures that would be required to reduce emissions have been politically explosive. "This is a big deal," said Timothy E. Wirth, the Under Secretary of State for Global Affairs, in a telephone interview from Geneva. On Wednesday he is scheduled to present the American position at a negotiating session among some 150 nations who signed the 1992 treaty on climate change.

"Saying that we want to have a target that is binding is a clear indication that the United States is very serious about taking steps and leading the rest of the world," he said. "We will be getting more and more specific as the next year and a half rolls through." The Geneva talks are a prelude to a conference in Tokyo late next year where the signers of the treaty plan to set forth the next steps in heading off worldwide climate change.

The Administration would have preferred to wait until after the election before introducing tougher measures, but the diplomatic timetable would not allow that.

In the treaty, negotiated in Rio de Janeiro during the Bush Administration, industrial countries set a non-binding goal of limiting emissions of greenhouse gases by 2000 to the levels that prevailed in 1990. But the United States and most other countries are unlikely to meet that goal, and have since conceded that even deeper cuts in pollution are needed.

In remarks prepared for delivery by Mr. Wirth on Wednesday, the United States rejects some proposals for steep and immediate cuts in pollution, such as the 20 percent cut within a decade that is being sought by small island nations fearful of being swamped by rising oceans as the planet warms. Mr. Wirth will call that goal unrealistic, given the economic disruption that would occur if energy consumption were restricted so sharply. A copy of his prepared text was obtained by The New York Times today. He will also say that the United States wants flexibility to allow every country to meet the new targets in whatever way seems best to each government, and he signaled that the Administration intends to use market-based approaches, like the trading of pollution permits, to help its industries do so in whatever fashion they deem most efficient.

Those positions seemed intended to deflect some of the political fallout from industry groups that have strongly opposed strict new measures to combat global warming. The Administration in the past has adopted purely voluntary approaches, which have cut the growth in pollution but have failed to actually reduce emissions.

John Schlaes, executive director of an industry group that opposes quick action to head off global warming, said that the key to the Administration's proposals would lie in details of the timing and extent of any emission reductions that are to be sought. His group, the Global Climate Coalition, is made up of oil, coal and electric companies and industries that use large amounts of energy. "Any kind of binding target, without doing the appropriate analysis and assessment, and then having a dialogue with the American public, doesn't make sense," he said in a telephone interview from Geneva, where he is observing the negotiations.

Environmental groups generally reacted positively to the Administration's position, although not all of them favor the market-based approach that Mr. Wirth mentioned.

"It shows that the Administration is serious about this issue," said Michael Oppenheimer, an atmospheric physicist who is a senior scientist at the Environmental Defense Fund in New York. "It shows that they have accepted the judgment of the scientific community that climate change is happening and that something has to be done about it." In his prepared remarks, Mr. Wirth calls for quick action, not decades of delay, and for concrete measures, not vague promises, in the binding measures that would be negotiated in time for the meeting scheduled in Tokyo at the end of next year. "We are not interested in grand rhetorical goals that are impossible to realize," he says in his speech. "We want the negotiations to focus on outcomes that are real and achievable."

Mr. Wirth and other senior leaders are expected to issue a joint statement of policy on Thursday, joined by many nations, and a key test for the Administration is the extent to which its views are incorporated into that statement. Although his statement is cautious about what steps to take next, it is unequivocal in calling the efforts to date a failure. "We have to do better," it says bluntly.

The Administration had held its negotiating stance close to the vest in recent weeks, officials said, partly to avoid heavy criticism from industries that contend that acting precipitously will do economic damage. Mr. Wirth said today that those critics, who have also attacked the scientific work supporting the theory of global warming, are "bent upon destroying" the climate treaty.

By John H. Cushman



## Appendix E

### Hofstede's long-term orientation dimension and masculinity dimension

Table 1. *Characteristics of a short-term oriented versus a long-term oriented society adapted from Hofstede, G. (2011, p 15)*

<i>Short-term orientation</i>	<i>Long-term orientation</i>
Most important events in life occurred in the past or take place now	Most important events in life will occur in the future
Traditions are sacrosanct	Traditions are adaptable to changing circumstances
Supposed to be proud of the country a person lives in	Trying to learn from other countries
Service to others is an important goal	Thrift and perseverance are important goals
Relationships ordered by status	Relationships not ordered by status
A person is always the same	A person adapts to changing circumstances
Focus on fast results	Perseverance towards slow results

Table 2. *Characteristics of a feminine versus a masculine society adapted from Hofstede, G. (2011, p 12)*

<i>Femininity</i>	<i>Masculinity</i>
Relationship oriented	Ego oriented
Failing is a minor accident	Failing is a disaster
Quality of life, involvement and people are core concepts	Success, achievement and competition are important aspects
Learning is more important than achieving	Focused on fast results