

Global Climate Change Risk and Mitigation Perceptions: A Comparison of Nine Countries

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Abstract

To broaden our understanding of global climate change (GCC), this article presents results from an ongoing longitudinal research project that investigates public GCC risk perceptions in nine countries focusing on different perceptions important in policy formulation. A key goal of the study is to understand which nations express similar or different viewpoints with respect to explanatory factors such as threat perceptions, hazard experience, socio-demographics, knowledge of climate change, and other factors found in the environmental hazards literature. Despite many variances in GCC perceptions among the surveyed national populations, the analysis shows that some differences are marginal, while others allow the grouping of countries based on different perception factors. Survey results reveal a high degree of uncertainty with regards to climate change dimensions including risk, science, knowledge, and policy approaches to mitigate GCC.

Keywords: public perceptions, global climate change, international survey, country comparison, public policy support and behavior

1. Introduction

The Intergovernmental Panel on Climate Change's (IPCC) first working group concluded in its 2013 assessment report with 95% certainty that human behavior is the principal factor for rapid global climate change (GCC) recorded over the past decades (IPCC, 2013). Despite scientific consensus, public perceptions of climate change have shown widespread responses, high levels of uncertainty, and variation among various cultural groups. This variation is not well understood with regard to the level of differences and causes. Kahan et al. (2011) argued that understanding public perceptions of climate change risk requires knowledge of social values, place, or cultural characteristics, among other social values.

Previous research has focused on GCC impacts and the underlying science, failing to account for local impacts residents face and often perpetuating the idea that "global" changes affect "other" places (Moser 2006). Wardekker (2004) pointed out that communication efforts relevant to GCC do not acknowledge the importance of risk perceptions, specifically asking how science converges with uncertainties, moral dilemmas, the meaning of risk, as well as various other cultural explanations. These findings highlight the need to improve our understanding of public climate change perceptions. Unlike natural disasters, the concepts and knowledge of GCC impacts are relatively new. How people perceive climate change threats and the factors that explain these perceptions may be quite different than other natural hazards found in the environmental and social science literature due to differences that characterize GCC hazards (Burton, Kates, & White 1978; Slovic, 2010). The nature of the GCC hazard is also different from other natural hazards. While there is general agreement that the causes of GCC are anthropomorphic, it is uncertain when and how GCC will manifest itself, for example, into drought or abundant rain and flooding.

To develop effective policies for climate change mitigation and adaptation, it is paramount to understand how the public perceives these threats and to identify the underlying factors (Moser, 2010), but little data exist on how the causes of public risk perceptions; spatiotemporal hazards; and our ability and willingness to mitigate or adapt to GCC through behavioral changes and policy support (Leiserowitz, 2010; Schneider, Rosencranz, Mastrandrea, & Kuntz-Duriseti, 2010). To broaden our understanding of public perceptions and attitudes of GCC, this paper reports results from an ongoing longitudinal research project in nine countries, focusing on various dimensions of public GCC risk perceptions. One objective is to gain knowledge of the extent to which nations express

similar or different viewpoints and perceptions with respect to climate change risk factors. Besides national and cultural differences, personal experience of the hazard has been suggested as an explanatory factor. We have ample evidence that perceptions of natural hazards vary based on the characteristics of the hazard, e.g., in catastrophic versus non-catastrophic threats, long term versus sudden, illustrated by droughts versus tornadoes. Much of this work was reported by Paul Slovic (2010). Perceptions can also change over time (Tate et al. 2003), e.g., recent studies show increased concern over nuclear power plants following the Fukushima nuclear accident in Japan (Mah et al., 2014; Kim et al., 2014) Lastly, risk perceptions vary by the nature of the hazard in terms of consequences, level of uncertainty, whether the hazard is voluntary, known or unknown, and dread, among other heuristics (Slovic, 2010). This paper contributes the rich and robust history of hazards research and societal response to natural disaster threats in the social sciences (Barrows, 1923; White, 1974; Mitchell, 1990; Cutter, Mitchell, & Scott, 2000) by addressing and explaining a broad array of perceived threats from GCC in nine nations.

1.1 Study Sites

Nine countries were selected for the study. These countries are relevant to the global efforts of mitigating and adapting to GCC. The United States (US) is an obvious choice, as it a) is a Superpower, b) is the richest country in the world, and c) has the second highest GHG emissions (World Bank, 2014a). In addition, a significant national political debate over GCC still is ongoing. The participation of the U.S. in global treaties to lower GHG emissions is crucial to successfully adapt to GCC. Major natural disasters in the U.S. have been linked to climate change in the media, and the little research on climate change perceptions that has been published originates in the US. Therefore, the results and findings of this paper can be compared to earlier studies for validation purposes.

Despite its level of economic development, Mexico (MEX) is still characterized as a developing country, has experienced coastal storms, and has a strong policy interest in sustainability practices. It was therefore selected as one of the nine countries for this study. Canada (CAN) was chosen because of its existing policies to reduce GCC. Moreover, three of CAN's major cities are ranked in the top ten cities of the world on the urban resiliency rating system demonstrating the potential for effective adaptation (Barkham, 2014). Japan (JP) was selected, because it is an island state and an important economic leader in the region. Additionally, Japan has much experience with ocean tsunamis and storm surges and may be especially sensitive to climate change impacts due to the location of its nuclear power plants. Brazil (BRA) plays a leading role in South America with the largest economy of the continent (World Bank, 2014b). The Amazon, one of the largest ecosystems on Earth, makes BRA extremely vulnerable to GCC impacts (Malhi et al., 2008). Germany (GER) was selected because of its significant leadership role in the European Union (EU) and consistently strong support for international action on climate change. Furthermore, GER was less affected from the recent economic downturn compared to other EU countries and will probably have larger political capital in future years to impact climate change policy (Hill, 2011). In comparison, Spain (ESP) was heavily impacted by the worldwide economic downturn and consequently has considerably reduced its financial commitments to renewable energy to offset these impacts (Pew Research Center, 2010). Nevertheless, successful adaptation to sea level rise and extreme flooding events will be key to ESP's future, as ESP has an extensive shoreline and a tourism sector.

The Netherlands (NET) play a leadership role in implementing design interventions and adaptation policies, as evidenced by the country's ability to successfully cope with storm surges and sea level rise. However, its strategies will be tested when sea levels rise as anticipated, because about 30 percent of the NET is below sea level. Finally, the United Kingdom (UK) was selected for this study, as it plays a key role in international policy support for climate change mitigation, but also may have internal differences on national policies toward the issue. Certainly, this study can be expanded to other countries, which is part of ongoing research, as well as conducting repeat studies over time to investigate longitudinal changes in perceptions and their causes. For example, the authors are currently examining changes in GCC perceptions in Japan as a result of the Fukushima nuclear disaster. At this juncture, however, the paper provides important findings on national public risk perceptions and their role in GCC policy preferences.

1.2 Public Risk Perception Research

Early risk perception studies include the book "The Environment as Hazard" by Burton, Kates and White (1978). Geographical research that initially focused on examining human behavior in the face of natural hazards has influenced the more recent fields of sustainability, vulnerability analysis, and human-environment coupled systems research. For instance, Short (1984) and Douglas and Wildavsky (1983) found that risk acceptance and perceptions are embedded in cultural and social contexts, i.e. friends, family, coworkers, and respected public

officials are responsible for transmitting many of the social influences affecting an individual's response to hazards.

The field has since added work on responses to technological hazards as well (Bowonder, Kasperson, & Kasperson, 1985; Flynn et al., 1995). In psychology, the work by Paul Slovic (2000) has coined the field of human response to both natural and technological hazards and disasters. Some influential findings on risk perceptions emerged from interdisciplinary research on siting a proposed high-level nuclear waste repository that included consideration of the social amplification of risk concept (Kasperson et al., 1988), public trust factors (Pijawka & Mushkatel, 1991), and the role of scientific uncertainty. Recent studies also highlight the importance of emotions for the decision-making process (Paton, 2008; NRC, 2010).

Over the past 20 years, our knowledge on public perception of GCC has grown extensively, particularly for the US. (Leiserowitz, Maibach, & Roser-Renouf, 2010; Whitmarsh, Seyfang, & O'Neill, 2011; Fischer et al., 2012; Jin & Shriar, 2013; Hagen & Pijawka, 2015). These studies inform us that risk perceptions have a significant impact on people's behavior and need to be considered when developing and implementing GCC policies (Kahan, 2012; Akerlof, Maibach, Fitzgerald, Cedeno, & Neuman, 2013). Overall, existing GCC surveys show that the public in the US generally acknowledges the existence of anthropogenic GCC and is highly concerned (Dessai et al., 2004; DEFRA, 2007; Ockwell, Whitmarsh, & O'Neill, 2009). Yet, the level of public engagement is low and pro-environmental behavior (i.e. support for renewable energy) is even less common (Whitmarsh, 2009; Moloney & Strengers, 2014). For example, few people go beyond advancing domestic energy conservation and even less commit to behavioral changes.

Despite the broad scientific consensus on the reality, risks, and causes of GCC, widespread dissent exists among the public with regard to GCC. Research found that the role of trust is critical in perceived risks of climate change, and this factor has to be addressed (Slovic, 2000). The lack of public consensus on GCC risks may result from distrust in the scientific information, lack of understanding, or distrust in the sources of the scientific information.

The way the public thinks about the nature of GCC may result in misinterpretations of the GCC facts as shown by Weber and Stern (2011). Misconceptions, such as the belief that greenhouse gas (GHG) emissions are a type of air pollution, result in public support for the wrong policies (Prinn, Reilly, Sarofim, Wang, & Felzer, 2005). The considerable gap between expert assessments and lay understanding is exemplified in the current IPCC report (2014) and other reports and publications (Thomas, Melillo, & Peterson, 2009; Hagen et al., 2016) that focus specifically on GCC impacts in the US.

More recent studies found that insufficient knowledge and the lay public's inability to assess technical information does not explain differences between the public's and the scientists' level of concern. These studies acknowledge that, while public GCC science understanding requires improvement, illiteracy is not the issue. Instead, the reason that communication programs fail is the lack of acknowledgement of individual positions on climate change due to varying values and cultural worldviews (Kahan et al., 2011). Little research has explored these values and worldviews and how they impact people's risk perceptions and their support for climate change policies. Increasing our understanding of public risk perceptions would point out key areas that communication programs could leverage to enhance the effectiveness of information dissemination. This study aims at building this understanding by testing the level of public acceptance and support of various GCC adaptation and mitigation strategies in nine countries.

2. Method

2.1 Sampling

Reliability was a key consideration in the study design. It was important to select countries that are relevant to the global efforts of mitigating and adapting to GCC and to establish validity and authenticity within the surveyed population samples. Household respondent data was needed for age, income, gender, and level of education; these samples had to represent each of the regions in the national data set and all social groups in each country. As the surveys were based on Internet panels, this was not assured from countries in Africa, which is why they were excluded. This is an acknowledged shortfall of this research, which will be addressed in an ongoing longitudinal multi-year initiative. Household were selected randomly within the parameters of socio-economic variables and computer ownership. We sampled 7,327 households overall, with each country's sample size large enough to scientifically and adequately generalize to the larger population with a 95 percent confidence level and a ± 4 percent margin of error. Within-country sample sizes range from 539 (CAN) to 947 (US) respondents (Figure 1). A literature-based theoretical framework was developed to guide the survey questions instrument design and data analysis. The framework identifies important variables affecting how the

public perceives GCC threats and the role of these perceived threats impacting the public’s policy and behavior towards climate change mitigation and adaptation (Figure 2).

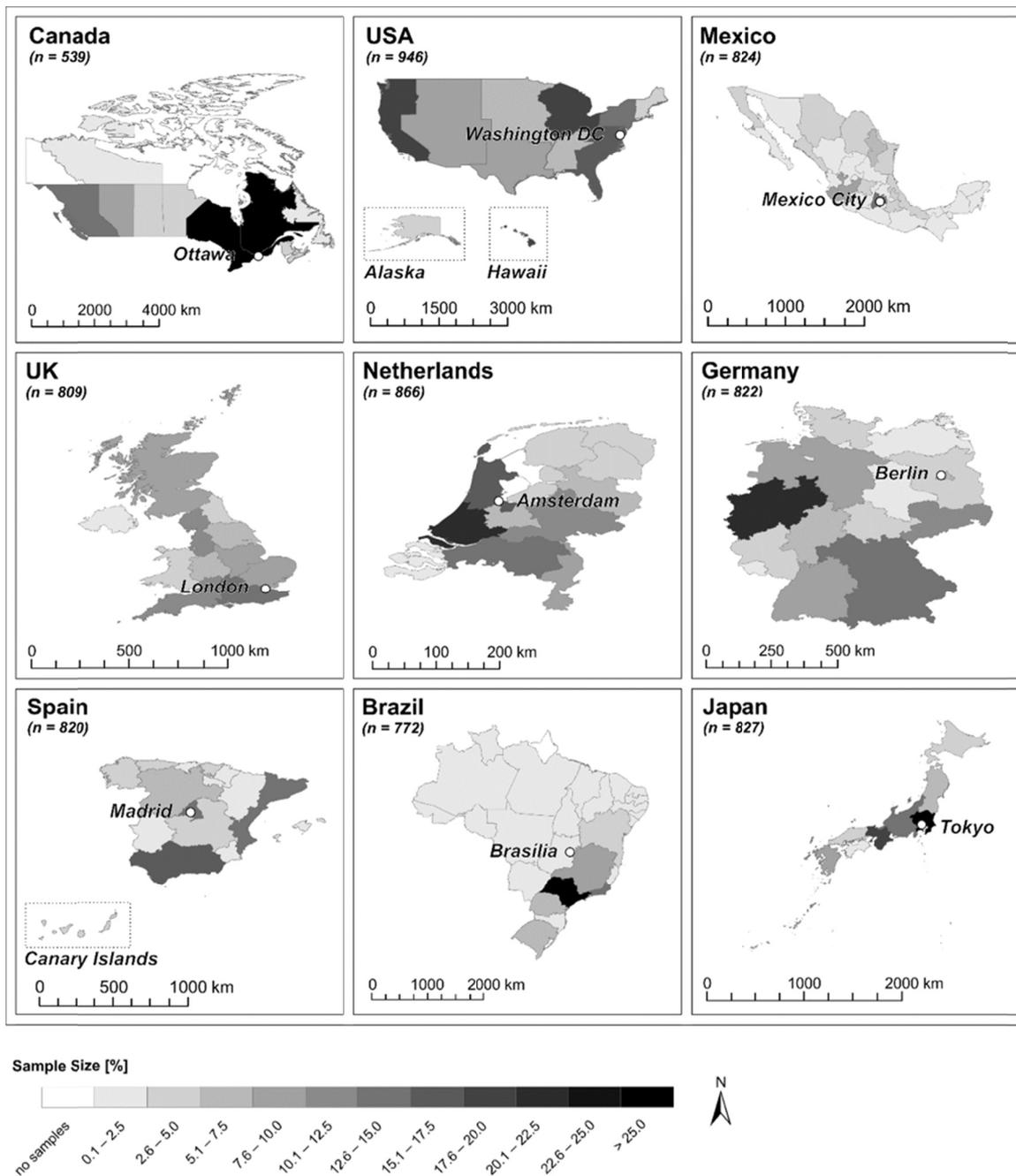


Figure 1. Spatial distribution of survey participants

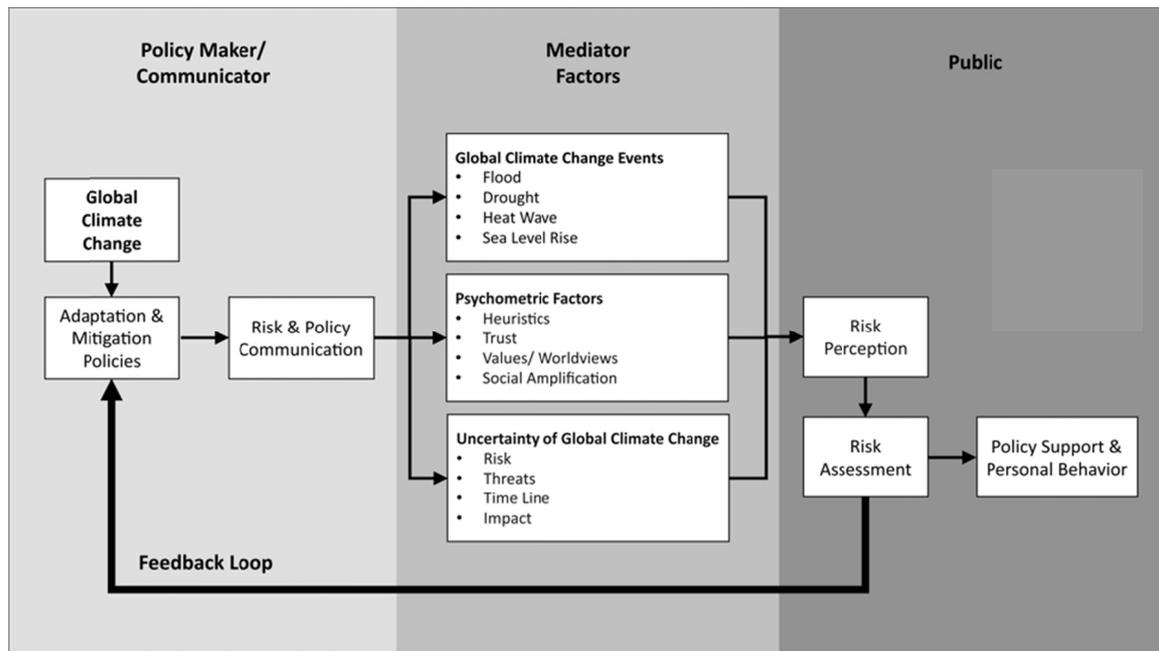


Figure 2. Theoretical framework

2.2 Survey Questions

Guided by the theoretical framework, the survey covered questions relevant for investigating risk perceptions of and attitudes towards GCC, the willingness to support mitigation and adaptation strategies. Questions were divided into thematic groups. The first set of questions focused on the importance the government should place on a set of societal issues including climate change (political salience). The second set of questions captured the participants' level of awareness and knowledge of various GCC threats. For example, questions focused on the definition of GCC and if the participants felt informed about the impacts, causes, and existing mitigation or adaptation measures. The third set explicitly addressed the public's perceptions of GCC risks, threats, and level of concern about possible GCC impacts. Other questions presented survey participants with scientific facts and statements about GCC to ascertain attitudes about GCC, its causes, risks, and beliefs regarding scientific data, as well as causes of GCC, support for renewable energy, and other perceptual and attitudinal factors.

2.3 Statistical Methods Applied

Various statistical methods were applied throughout the study, guided by the hypothesis that *public perceptions of GCC, associated threats and risks, saliency of the issue, and acceptable public strategies vary internationally*. The key statistical concepts applied to test the hypotheses were descriptive methods such as frequency distributions and averages, multiple regression, and stepwise regression. As most responses were reported on scales, mean responses on these scales were reported for cross country comparison. The Kruskal-Wallis test was used to explore if answers varied significantly between countries (Field, 2013). Using Kruskal-Wallis for testing also yielded average rank scores and identifies outliers among the sampled countries.

3. Results

3.1 Level of Concern

At the international level, the majority of people participating in this study were concerned about adverse GCC impacts. More than 80 percent of the respondents expressed at minimum some concern; almost 32 percent expressed high concern. Only 6 percent indicated that they are not concerned at all.

Of the nine countries, MEX and BRA stand out for expressing the greatest levels of concern (Figure 3). In CAN, ESP, and GER, over 70 percent of the respondents were 'concerned' or 'highly concerned'. In JP, the percentage of participants who are 'slightly concerned' is larger, with over 20 percent, than in all other countries. In the US, 14.9 percent of the respondents are 'not at all concerned.', significantly more than in other countries.

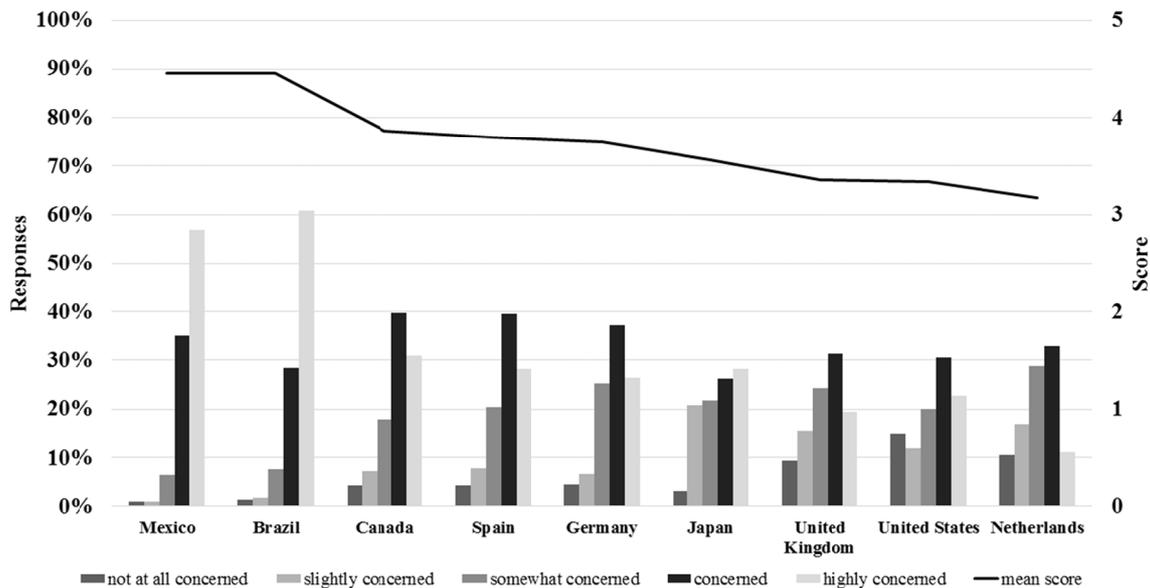


Figure 3. Country specific measurements of concern

Respondents were asked on a scale from 1 to 5 how concerned they are about potential impacts of GCC.

To investigate why people are concerned with GCC, the survey asked respondents to rate three possible reasons on a 5-point Likert scale from ‘strongly disagree’ to ‘strongly agree’: (1) that GCC will be irreversible at some point; (2) that there is a lack of political will to prevent GCC; and (3) that they worry about the impacts on future generations more than the impacts in their life time. Over 75 percent of the respondents (strongly) agreed that it will not be possible to reverse GCC. BRA and MEX exhibit the strongest agreement with 52.8 and 67.9 percent respectively. Almost 46 percent of all respondents worry about future generations, but not the present. People in GER are most worried about the intergenerational factor relative to the other countries with over 65 percent (strongly) agreeing. GER is followed by CAN (54 percent), BRA and the NET (51 percent), the US (45 percent), MEX (38.7 percent), JP (37 percent), the UK (36 percent), and ESP (34 percent). Political saliency, i.e. where populations rank GCC or global warming among other socio-economic policy problem areas the government addresses, is another central factor of public GCC perceptions and can be employed as a measure of concern. Previous studies found that GCC is considered a low priority issue, especially in the US where climate change and the environment in general are considered fairly low national priorities (Ockwell, Whitmarsh, & O’Neill 2009; Leiserowitz, Maibach, & Roser-Renouf, 2010).

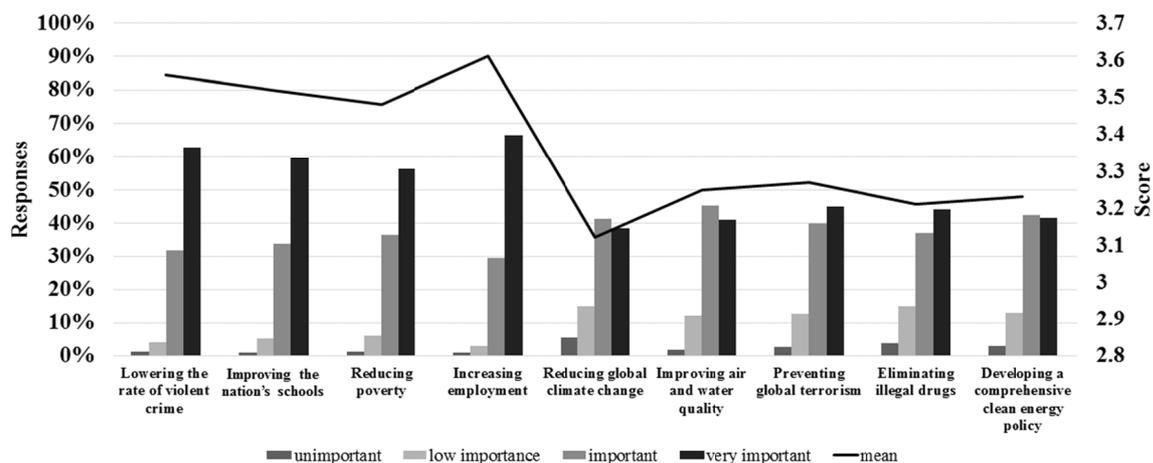


Figure 4. Global trends for saliency of global climate change

Respondents were asked on a scale from 1 to 4 what level of importance the government should place on nine governmental activities.

Our survey supports previous findings that, on the global scale, GCC is considered a low saliency issue. The survey measured political saliency comparing nine topics on how important it is that government act on various problems, one of them is “reducing GCC”. Figure 4 illustrates the frequency distribution and means for all nine countries combined. With an average of 3.12 ± 0.86 , GCC is the *least* salient issue for the combined sample. Only 38.3 percent thought it was a ‘very important’ issue to act on, rating it far below crime, education, employment, and poverty. The combined results of the ‘level of concern’ and the ‘political saliency’ factors show that climate change should be considered as important, but is not high on the political saliency scale. However, when we combine the ‘important’ and ‘very important’ responses, saliency responses reach 80 percent. That percent of the public would like their government to engage in climate change policies. By individual country, GCC mitigation is positioned in the bottom third among the nine problem areas outlined in Figure 4. In the UK, the US, and the NET, mitigating GCC is ranked last. 36.7 percent among the public in the NET view climate change either as no or low priority for their government, followed by 34.4 percent in the US, and 25.8 percent in the UK. With the exception of BRA, less than half of the public in all other countries believe that the government should treat climate change as a high priority issue.

3.2 Risk Perceptions

Only 3.6 percent of the survey respondents believe that climate change will have no negative effects, but 79.9 believe in moderate or serious negative consequences from GCC over the next two decades. Noteworthy differences between the nine countries concerning the perceived severity of negative consequences induced by GCC are illustrated in Figure 5. With the exception of the NET, the UK, and the US, the public expects serious negative consequences from GCC. The majority of respondents in MEX and BRA fear serious negative consequences if future increases in global warming will occur. In contrast, almost 11 percent of the US participants do not believe that GCC will happen. This suggests that anthropogenic GCC is disputed by a much higher portion of the US public compared to any of the other eight surveyed countries. GER, ESP, and JP show a comparable frequency distribution and mean scores ranging from 4.27 to 4.35, suggesting that the respondents anticipate moderate to serious negative impacts from GCC over the next two decades. The third group of countries with mean scores below 4.0 are the UK, the US, and the NET, where the majority of participants assume slight to moderate negative consequences from GCC.

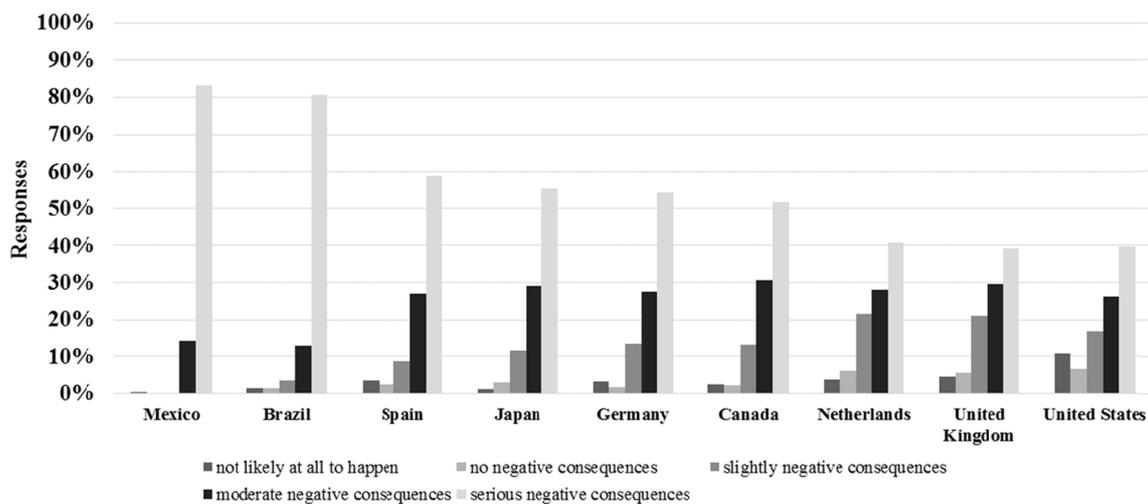


Figure 5. Perceived level of hazard consequences from future global climate change

Respondents were asked on a scale from 1 to 5 what they think the level of consequences will be of in case of a substantial increase in global warming resulting in GCC in the next two decades.

3.3 Public Support for GCC Policy and Willingness to Change Behavior

Our survey confirms results from previous studies finding that the public largely supports GCC policies at the national and international scale, but resists tax policies, especially in the US (Moser, 2006; Leiserowitz, Maibach, & Roser-Renouf, 2010). Less than 25 percent of the respondents think tax hikes are warranted. Less than 33 percent of the public support tax hikes for mitigation policies.

We created additive indexes from the individual policy questions to better what works in GCC strategies. GCC adaption is a more localized challenge compared to GCC mitigation, because GCC impacts vary regionally.

Therefore, adaptation questions have to be designed more generally to allow international participants with different GCC impacts to answer the same questions. The indexes were based on how supportive the sample populations were to the following mitigation and adaptation measures

Index A: Mitigation policies (overall support)

- Improving the fuel efficiency of vehicles
- Higher standards for the energy efficiency of buildings, construction, material production, and household appliances
- Higher taxes for electricity
- 20 percent of electrical power produced from renewables by 2020
- Private sector subsidies to invest in alternative energy sources
- Higher taxes and tolls on roads
- Require photovoltaics or solar panels on building rooftops
- Require higher density developments and transit-oriented, mixed use developments

Index B: Adaptation policies (overall support)

- Over the next two decades, require cities to improve coastal flood protection
- The government (at the national or federal level) should mandate action be taken from each individual to personally take responsibility to reduce the threat of GCC
- National governments should require action be taken from local governments to reduce negative consequences of GCC
- National governments should support action to respond to negative impacts of GCC

Few respondents are opposed to *any* effort to mitigate or adapt to GCC and only 7.2 percent oppose mitigation policies. Support for mitigation strategies total over 57 percent. The NET and the US stand out with a relative strong opposition to mitigation policies of about 16 percent compared to less than 8 percent in the remaining six countries. Of all respondents, at least 45 percent are in favor of mitigation policies, but in the UK, the NET, GER, and JP, at least 40 percent also are undecided whether or not to support any policies that would mitigate GCC. At the global and national scale, the response pattern for adaptation support is similar to the previously discussed mitigation. In fact, around 7 percent oppose, 27 are uncertain, and 65 somewhat support adaptation policies in general. Nonetheless, responses also point to significant differences between the nine countries. Answers by survey participants in the US suggest a stronger opposition to adaption policies than recorded in any other country. About 20 percent of the US participants are against supporting adaption policies. Moreover, the US and UK are the only nations without a majority support for adaptation policies.

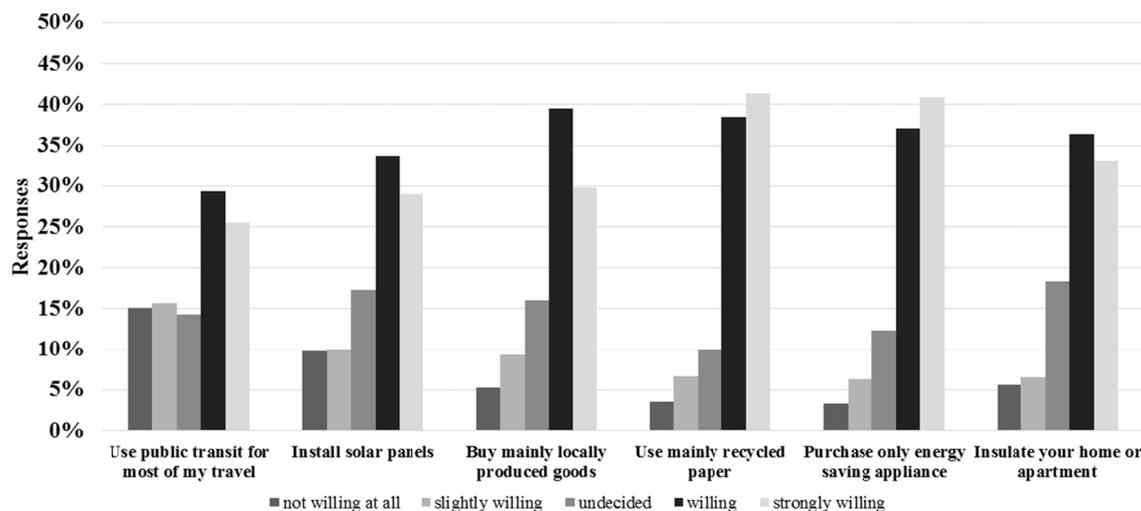


Figure 6. Frequency distribution for behavioral questions – global trends

Respondents were asked on a scale from 1 to 5 how much they are willing to change their behavior in the listed areas to reduce the causes of GCC.

With regard to the nine nations' willingness to change behavior to mitigate GCC, responses suggest higher likelihood for changes that do not significantly alter routines or are more expensive (i.e., purchasing recycled paper and energy saving appliances). This presents an opportunity for both communication and policy development, because more than 50 percent of the respondents are willing to change their behavior in all categories. Over 50 percent indicated that they are (slightly) willing to use public transportation more frequently (Figure 6). Yet, there is still hesitancy related to behavior change in terms of installing solar panels (17.3 percent), shop local products (16 percent), and home insulation (18.3 percent), as indicated by the number of undecided responses This underscores the importance for improving the understanding of what factors impact the decision process.

3.4 GCC as a General but not Personal Threat

Our survey reveals that people generally identify GCC as a serious hazard, but not automatically as a direct threat to themselves. Figure 7 presents the results of a categorical index that was created based on the public's threat perceptions of GCC over the long-term a) themselves, b) people in their own country, c) people in other countries, and d) plants and animals. Results show that the public threat perceptions show significant variation in severity. While more than 80 percent of the respondents in BRA and MEX believe GCC will pose a high threat, less than 20 percent in the NET reached the same conclusion. 15.2 percent in the UK, 30.0 percent in the US, and 22.9 percent in the NET view GCC as a slight threat. High levels of threat are mostly perceived to affect people in other countries, plants, and animals. Overall, only 33.4 percent perceive GCC as a high treat for themselves or their family. This indicates that GCC is perceived as a distant risk.

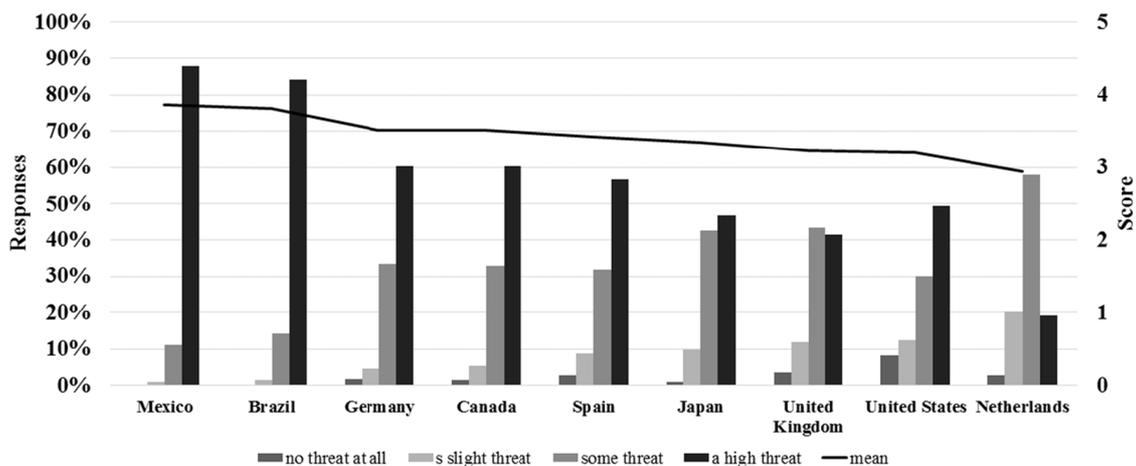


Figure 7. The 50 year threat perception of global climate change

Respondents were asked, under the assumption that GCC continues to occur over the next 50 years, on a scale from 1 to 4, how they would rate the level of threat resulting from GCC.

Figure 8 compares the responses on the amount of time it will take until GCC impacts will be experienced a) globally and b) locally. With exceptions such as the NET and the UK, most respondents believe that the impacts are already visible somewhere on Earth. Furthermore, with the exception of the US, the category 'never' received the lowest level of agreement among all participants. Fewer people reported that impacts are already being experienced in their own region compared to somewhere on Earth.

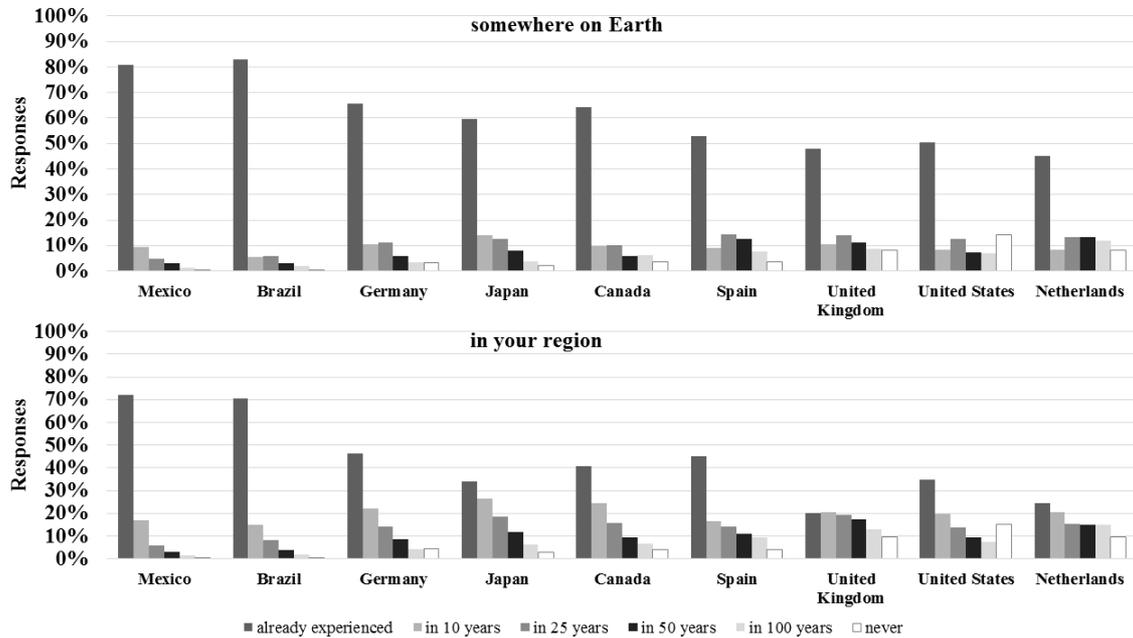


Figure 8. Timeframe until GCC impacts will be experienced globally and locally

Respondents had to estimate how long it will take until negative impacts of GCC will be experienced a) somewhere on Earth and b) in their region.

3.5 Country Similarities

Figure 9 positions the nine surveyed countries in a 3D cube based on the perceived a) level of personal concern over GCC, b) personal level of threat, and c) governmental trust in terms of institutional management of risk. The differences in mean scores among the countries are often only marginal, which allows to cluster the countries. For example, the UK, JP, the US, ESP, and GER show strong similarities of the perceived GCC threat level. The maximum difference in the mean scores for the three principal perception factors among the five countries is less than 0.5. The level of perceived personal threat, CAN, BRA, and MEX, is the highest. The NET is an outlier with regard to the perception factors mapped in Figure 9. Although the NET's level of personal concern over GCC and trust towards the government as risk manager are similar to the results of the UK, JP, US, ESP, and GER, the perceived level of threat is below the threat level reported in any other country. This is in large part because the country is already strongly engaged in adaptation activities and national policies, such as levies and floodgates, due to its topography. Since a sizeable portion of the country is below sea level, the population is accustomed to the natural threats.

Figure 10 positions the nine nations on the three dimensions of adaptation and mitigation policy support and commitment to behavioral changes. BRA and MEX show the largest level of support, not only being most supportive of climate change policies, but also most willing to engage in behavioral changes to mitigate GCC. JP, GER, ESP, and CAN also show similar responses. Another grouping consists of the UK and the NET, who are similar in terms of behavior and in their low support for adaptation policies. The US show the least support among the public for any climate change policy.

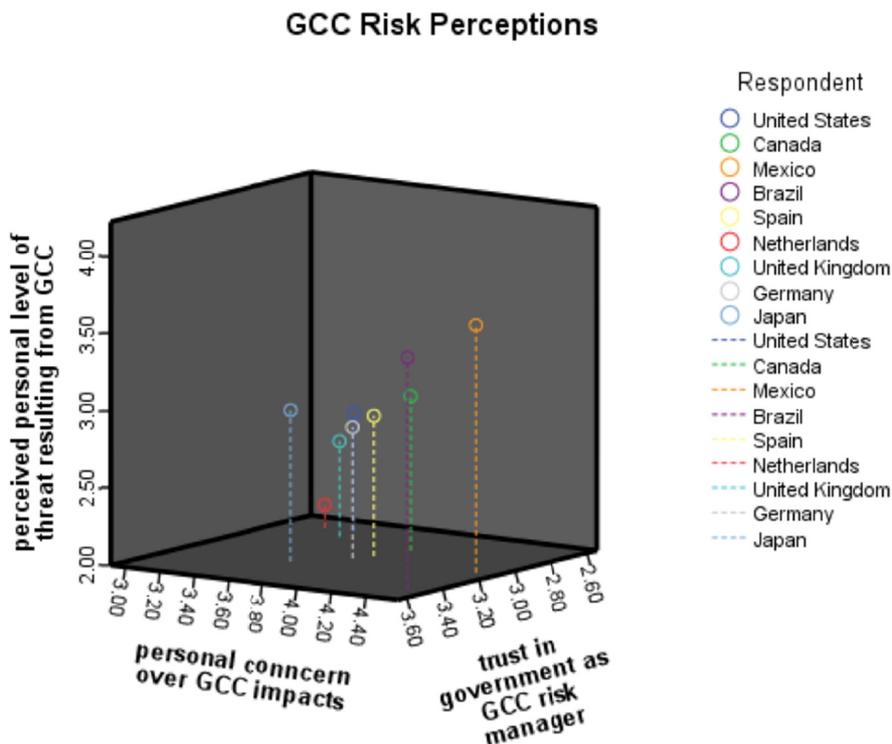


Figure 9. Country comparison of important risk perceptions

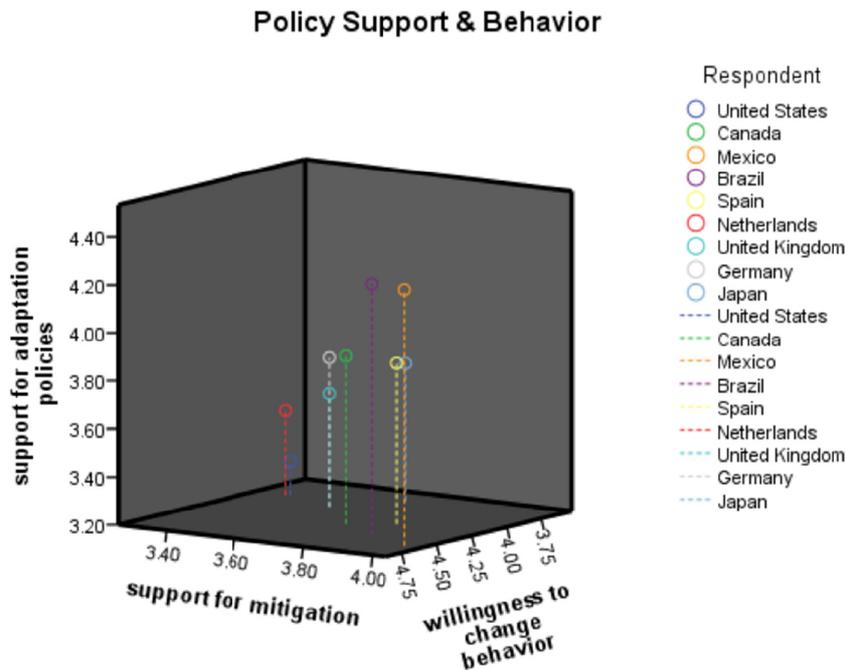


Figure 10. Country comparison of public policy support and willingness to change behavior

4. Discussion

Our data support the research hypothesis that public GCC perceptions, measured in terms of threat and risk, political saliency, and support for public mitigation and adaptation strategies, vary across countries. Results show that about 90 percent of the public in BRA and MEX are concerned about GCC, which is perceived as a high risk

that requires stronger governmental involvement. Contrary, the US, NET, and UK are the least concerned about GCC threats, risks, and potential impacts. Overall, survey participants strongly support behavioral change to mitigate GCC. Between 63.5 percent (JP) and 96.7 percent (MEX) were either willing or strongly willing to commit to behavioral changes, with CAN, BRA, and MEX exhibiting the strongest will to implement changes. Majority support were given to the options of using more recycled paper and purchasing energy saving appliances by study participants. However, a change in travel behavior among the public is less likely. For example, among the surveyed populations in the NET and the US, close to 25 percent dismiss the idea of using public transit more frequently.

Our findings indicate that the public perception of GCC risk are in conflict with the findings and recommendations provided by the scientific community. For instance, the public underestimates personal risks in contrast to views of scientists that GCC is occurring (Pittock, 2009). As we see in this paper, the public varies in their perceptions, exhibits high levels of uncertainty, and sees little risk to themselves in their local areas. Additionally, there is little trust in institutional risk managers.

The high levels of uncertainty reported by the survey respondents present an opportunity for new communication efforts. Many people are not sure about the danger GCC poses today and how it will impact future generations, are undecided to support GCC mitigation strategies, and question the reliability of GCC information sources. The comparatively high levels of public uncertainty and indecisiveness provide opportunities to influence public behavior and perceptions by objective GCC coverage. If people can establish personal connections to GCC impacts, it will likely increase their level of concern and support for mitigation and adaptation policies. Finally, awareness of national disparities in tolerable policies is vital for reaching an agreement on international policies and global targets. Thus, more in-depth survey research including diverse populations is necessary to allow more country comparisons and obtain sub-national data.

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