

# Calculated **RISK**: Comparing global perceptions of climate change impacts and responsibilities

Danielle Chipman<sup>1</sup>, Contributors: Kelli Larson<sup>1,2</sup>

<sup>1</sup>School of Sustainability, Arizona State University, <sup>2</sup>School of Geographical Sciences and Urban Planning, Arizona State University

## DATA COLLECTION

This project analyzes interview data from six global sites on individual perceptions of climate change risks and impacts. Data was collected through the **Global Ethnohydrology Study**, a multi-year and multi-site study lead by Drs. Amber Wutich and Alexandra Brewis. This study utilizes data from the 2012 study. Sites were designated as "Developed" or "Developing" based on classifications by the United Nations.

Country	Site	N	Classification
Australia	Brisbane	72	<b>Developed (n=209)</b>
New Zealand	Wellington	74	
United States	Phoenix	63	
China	Shanghai	55	<b>Developing (n=191)</b>
Fiji	Viti Levu	80	
Mexico	Teotihuacan	56	

## 1) WHAT TYPES OF IMPACTS ARE EXPECTED, AND WHEN?

**Water shortages** were identified as the most concerning potential impact in both developing and developed contexts. Developed sites were least concerned about the **risk of disease**, while developing sites were least concerned about the risk of a **decreased standard of living**.

**Likelihood of climate change impacts.<sup>1</sup>**

**When will climate change start to impact your local area?<sup>2</sup>**

In developing sites, 51.8% of respondents said "people are being harmed now", compared to only 17.2% in developed sites. Overall, **developed sites were more likely to temporally distance themselves from the impacts** of climate change.

## 2) WHERE AND AT WHAT SCALES ARE IMPACTS LIKELY?

People tend to find **global** rather than **personal** risk more concerning. This suggests the existence of the **hyperopia effect**, wherein broad, global risks are seen as more concerning than more local risks. This effect was consistent for both developed and developing sites.

**Likelihood of personal vs. global impacts.<sup>3</sup>**

**Will poor or wealthy countries be more affected?<sup>4</sup>**

Most respondents agreed that both wealthy and poor countries will be affected by climate change, but in different ways. However, respondents in **developed sites were three times more likely than those in developed sites to say that poor countries would be more impacted** by climate change.

## 3) WHO IS RESPONSIBLE FOR TAKING ACTION TO DEAL WITH CLIMATE CHANGE?

The majority of respondents from all sites had a **high perception of personal efficacy** regarding their individual ability to decrease the effects of climate change, although respondents from developing sites were slightly more likely to have high perceptions of personal efficacy.<sup>5</sup>

Respondents from all sites overwhelmingly indicate that their **government has a responsibility** to deal with climate change.<sup>6</sup> The majority of respondents in both developing (80.1%) and developed (64.1%) sites thought that their **government was not doing enough** to mitigate the effects of climate change. In developing sites, 30.1% of respondents thought their government was doing about the right amount, compared to 11.5% in developed sites.<sup>7</sup>

**To deal with the problem of climate change, is your government is doing too much, not enough, or about the right amount?**

**Personal efficacy in dealing with climate change.**

## CONCLUDING THOUGHTS

**Conclusions by research question:**

- Developing sites tend to be more concerned** about every type of climate change risk, and to believe that these risks are more imminent.
- Overall, respondents tended to perceive **global risks as more concerning than personal risks**. Respondents from developed sites were far more likely than developing sites to say that climate change would be more harmful to poor countries.
- Respondents from all sites are generally **open to government solutions** and feel that their governments are currently not doing enough to mitigate the effects of climate change. They also have a **high perception of their personal ability to affect climate change**.

**Areas for further research:**

- Evaluate whether an **individual's characteristics** (such as experiences with extreme events, household income, religion, political affiliations, and environmental attitudes) relate to climate change risk perception.
- Determine whether risk perceptions influence support for different **policy options**.
- Research risk perceptions from other sites, especially from areas not represented in this study (**Africa, South America, Southeast Asia**).

## NOTES AND ACKNOWLEDGEMENTS

1 Mann-Whitney U: standard of living (11552), water shortages (12676) and disease (8276). Differences between responses from developed/developing sites was significant for all impacts (p<0.001). Reliability of composite scales were determined using Spearman's Rho: standard of living (0.607), water shortages (0.462), disease (0.595).  
2 Mann-Whitney U = 8276. Significant differences between responses from developed/developing sites (p<0.001).  
3 Mann-Whitney U: personal impacts (9375), global impacts (11231.5). Differences between responses from developed/developing sites significant for both scales of impact (p<0.001). Reliability of composite scales were determined using Cronbach's alpha: personal impacts (0.813) and global impacts (0.806).  
4 Chi-Square = 30.771 (df=3). Significant differences between responses from developed/developing sites (p<0.001).  
5 Mann-Whitney U for personal efficacy questions: ability to reduce effects (17464), ability to make a difference (14284). Differences between responses from developed/developing sites significant for both (p=0.034, p<0.001, respectively).  
6 No significant difference in responses between developed and developing sites.  
7 Chi-Square = 21.345 (df=2). Significant differences between responses from developed/developing sites (p<0.001).

This material is based upon work supported by the National Science Foundation under Grant No. SES-1462086, DMUU: DCDC III: Transformational Solutions for Urban Water Sustainability Transitions in the Colorado River Basin. Any opinions, findings and conclusions or recommendation expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation (NSF).