

Questions¹ from EPA's Part 1 Adaptation Webcast November 18, 2010

All Presenters

1. *Would the speakers please comment about a conflict I see between what Joel implied - that we need to normalize climate change as common knowledge in order to plan our adaptations to it - and what David and Brendan suggested - that to accommodate the deniers, frame adaptation measures as energy independence, clean air, etc. rather than climate change.*

J. Scheraga: The speakers' comments were not inconsistent. Joel emphasized the importance of "mainstreaming" climate adaptation into decision making. The motivation for doing this is not to deal with climate change for its own sake. Rather, it's to help ensure states and local communities are able to attain the environmental, public health, and economic outcomes they desire (e.g., clean air, safe drinking water, energy independence). For this reason, it's reasonable to describe adaptation investments as measures intended to help communities attain the outcomes they care about -- as opposed to investments being made to "deal with climate change." This is consistent with the comments made by David and Brendan.

D. Ropeik: I suggest that respecting local sentiment is the most important part of building constructive relationships to support the things you want to accomplish. The idea here is not primarily to educate America about climate change or get everyone to accept it as common knowledge. It's to get adaptation work done that will not only help with the changes climate change might bring but provide other benefits to the communities. If in order to build public support for those goals, they are better presented in terms of those other benefits, so be it. In my mind, the goal of adaptation is not the "normalization of climate change". It's getting the work done that will help us adapt to it. The challenge of those who deny climate change is more of an issue in the fight over steps to mitigate what we're doing to cause it.

Further, in my opinion, convincing deniers should not be the goal. That is fighting something much deeper, much more intractable and less susceptible to change...the cultural cognition that leads us to choose opinions that conform to those of the group(s) with which we most identify, group in this case meaning the people who share your view of how society should be organized and operate. The argument is about something much more profound than just the issue of climate change and it's hard to get people to change at that deeper level.

B. Reed: I think that educating the public about climate change is a long-term endeavor and that framing adaptation measures under other titles just allows for greater short-term, non-polarizing action.

¹ Questions answered during the webcast are in bold.

2. *What do we say to people who bring up Bjorn Lomborg's book "Cool it" which talks about other strategies the government is not pursuing to deal with climate change?*

D. Ropeik: As with the previous question, this one also is tangled up in the polarized argument about whether climate change is real. Lomborg is a polarizing figure. So what. What difference does it make where the ideas come from if they are good ideas? Regardless of their source they should be considered, and adopted or rejected, on their merits, not their sponsors. The climate “war” attitude implicit here does not facilitate adaptation.

Emma Zinsmeister

3. *Will the EPA be doing (or already done) a presentation on the public health planning issues related to climate change?*

Answer: Yes, we plan on addressing the public health issues related to climate change in a webcast in 2011. Details will be posted to our State and Local Climate and Energy Listserv, which you can register for at:

<http://www.epa.gov/statelocalclimate/listservs/index.html#a01>.

In the meantime, there are a number of reports available on the potential impacts of climate change on human health. (See question 4, below.) Also, EPA’s Office of Children's Health Protection held a webcast in 2007 on the specific impacts for children's health. Details are available at:

<http://yosemite.epa.gov/ochp/ochpweb.nsf/content/webcasts.htm#4>.

Joel Scheraga

4. *Is there a presentation or information that is available for the healthcare sector to start to adapt to the public health concerns due to climate change?*

Answer: Several publications provide excellent overviews of the potential impacts of climate change on human health. This information can be used by the health care sector to begin to adapt to climate change.

In May 2001, the U.S. Global Change Research Program completed a major assessment (sponsored by EPA) of the potential impacts of climate change on human health. The assessment findings were published as a special issue of the journal *Environmental Health Perspectives*. The issue was entitled, “Human Health Consequences of Climate Variability and Change for the United States,” and can be found at:

<http://ehp.niehs.nih.gov/docs/2001/suppl-2/toc.html>

In 2003, the World Health Organization (WHO) published a book entitled, “Climate Change and Human Health: Risks and Responses.” The book describes the context and process of global climate change, its actual or likely impacts on health, and how human societies and governments could respond with a particular focus on the health sector. The book can be found at:

<http://www.who.int/globalchange/publications/cchhbook/en/>

In July 2008, EPA produced a report entitled, "Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems." The report concluded that climate change poses real risks to human health and the human systems that support our way of life in the United States. The report can be found at:

<http://www.climatescience.gov/Library/sap/sap4-6/final-report/default.htm>

Most recently, a federal interagency team produced a report entitled, "A Human Health Perspective on Climate Change: A Report Outlining the Research Needs on the Human Health Effects of Climate Change." The report was released in April 2010, and can be found at:

<http://www.niehs.nih.gov/health/docs/climatereport2010.pdf>

5. *Can you provide an example on climate change and management of invasive species?*

Answer: EPA issued a report in February 2008 on the potential impacts of climate change on invasive species. The report is entitled, "Effects of Climate Change on Aquatic Invasive Species and Implications for Management and Research," and can be found at:

<http://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=188305>

6. *Does EPA have plans to develop "localized" projections of climate change impacts that could be more useful to communities rather than large scale projections?*

Answer: EPA has done an extensive amount of research to assess the potential impacts of climate change on the United States. The scale at which the work is done (*i.e.*, the geographic resolution) is driven partly by the resource management and policy decisions under consideration. Much of the work EPA has already done on climate change impacts is at state and local and watershed levels; that is, at levels useful for community decision making.

More information about EPA's climate impacts and adaptation research activities can be found at:

<http://www.epa.gov/ord/npd/globalresearch-intro.htm>

<http://www.epa.gov/ncea/global/index.htm>

7. *Ropeik emphasized the need to localize information. Yet, most of the climate change impact information is done at a regional or global scale. How can we understand local impacts? Local cities/counties have trouble accessing this information.*

Answer: As noted in the answer to question 6, EPA has done an extensive amount of research to assess the potential impacts of climate change on the United States. The scale at which the work is done (*i.e.*, the geographic resolution) is driven partly by the resource management and policy decisions under consideration. Much of EPA's work has done at state and local levels – and at the watershed level. For example, some of EPA's water quality research includes projects that are sector specific and integrative across many aspects of water, including communities, their green and grey infrastructure, human dimensions, and aquatic ecosystems.

More information about EPA's climate impacts and adaptation research activities can be found at:

<http://www.epa.gov/ncea/global/index.htm>

Localized information and resources related to climate adaptation are also available from other federal agencies. For example, CDC has launched a "climate-ready states and cities initiative" intended to help state and city health departments investigate, prepare for, and respond to the health effects that climate change may have on people. More information on this initiative can be found at:

<http://www.cdc.gov/climatechange/>

More information on the work of other federal agencies can be found at the website for the U.S. Global Change Research Program (USGCRP):

<http://www.globalchange.gov/>

The USGCRP coordinates and integrates federal research on changes in the global environment and their implications for society.

Localized information and resources related to climate adaptation are also available from a variety of other non-governmental sources. For example, the work of ICLEI, which is an international association of local government as well as national and regional local government organizations, includes a focus on climate adaptation. More information on ICLEI's climate work can be found at:

<http://www.iclei.org/index.php?id=800>

8. *In addition to mitigating negative impacts, does adaptation also involve capitalizing on positive impacts?*

Answer: Absolutely. The goal of adaptation strategies should be to help build resilient, healthy, and prosperous communities in the face of a changing climate. Climate change will pose both risks and opportunities. Climate adaptation should therefore focus on reducing the risks, and taking advantage of the opportunities, presented by climate change.

9. *Do you have information for Hawaii, Alaska and PR (from the first graph of the presentation)?*

Answer: EPA does not have the specific information requested for Hawaii, Alaska, and Puerto Rico. However, information on climate change impacts in Hawaii, Alaska, and Puerto Rico is contained in the 2009 report from the U.S. Global Change Research Program entitled, “Global Climate Change Impacts in the United States” (<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>).

10. *Given that populations within one municipality probably have a range of attitudes and are at different places on the continuums, is it ok to pair up different messages that target different folks (e.g. the regulate pollution message delivered alongside the revitalize the nuclear industry message)?*

Answer: The motivation for “mainstreaming” climate adaptation into decision making is to help ensure states and local communities are able to attain the environmental, public health, and economic outcomes they desire (e.g., clean air, safe drinking water, energy independence). For this reason, it’s reasonable to describe adaptation investments as measures intended to help communities attain the outcomes they care about. Since different individuals care about different outcomes, it’s reasonable to focus on a diversity of outcomes as one describes the benefits of climate adaptation. It’s also important to recognize that investments in adaptation can yield multiple benefits. For example, in addition to reducing the risks presented by climate change, adaptation policies could also lead to reductions in greenhouse gases – or to other desirable environmental outcomes (e.g., reductions in emissions of criteria air pollutants). This provides further justification for framing messages to different constituents around different outcomes of concern.

11. *Why doesn’t the increase temperature match up with the change of precipitation? This participant is referring to the map showing west coast vs. east coast data.*

Answer: Changes in precipitation do not coincide perfectly with changes in temperature because factors other than temperature affect precipitation. Precipitation is not distributed evenly over the globe. Its average distribution is governed primarily by atmospheric circulation patterns, the availability of moisture, and surface terrain features. The first two of these factors are influenced (but not solely driven) by temperature. Thus, human-caused changes in temperature are expected to alter precipitation patterns, but other factors also affect precipitation.

12. *Where can we access some of the graphics around regional observed trends (from your presentation)?*

Answer: Joel’s presentation will be made available on this website.

13. *Can you provide an example on climate change on TMDL developments? What are states doing?*

Answer: EPA has not produced a report specifically examining the impacts of climate change on the development of TMDLs. Rather, EPA has done studies to examine the potential implications of climate change for sediment loadings to rivers and streams -- which could have implications for the development of TMDLs. EPA has also developed decision-support tools that can help users assess the potential impacts of climate change on sediment loadings.

If you take a look at the following link, you can find information on our WEPPCAT tool. It's an online tool that provides a flexible capability for creating user-determined climate change scenarios for assessing the potential impacts of climate change on sediment loading to streams using the USDA's Water Erosion Prediction Project (WEPP) Model:

<http://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=153583>

14. *What have people studied about the impacts of wildfires? What efforts are being made to model potential impacts?*

Answer: The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. In 2009, the USGCRP released a major report entitled "Global Climate Change Impacts in the United States." This report contains information on the impacts of wildfires. The report can be found at:

<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>

A number of the federal agencies that are member of the USGCRP have conducted an extensive amount of research on the impacts of wildfires (*e.g.*, in a variety of studies focusing on specific regions of the country). More information about USGCRP research can be found at:

<http://www.globalchange.gov/>

15. *How would shipping be impacted as suggested in the presentation?*

Answer: An interesting discussion of the potential impacts of climate change on shipping can be found in the report, "Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change – Great Lakes Overview." This report contains a chapter entitled "Climate Change and Great Lakes Fishing/Boating" (pages 39-42). The report can be found at:

http://www.geo.msu.edu/glra/PDF_files/GLRA_report.pdf

16. *Florida is a state that is posed to be greatly impacted by climate change - what adaption practices do see a being the most beneficial to that state?*

Answer: The State of Florida has developed its own Energy and Climate Change Action Plan, and identified strategies that are deemed beneficial to the state. The Plan was released in October 2008. A copy of the Plan can be found at:

<http://www.flclimatechange.us/documents.cfm>

Chapter 8 of the Action Plan focuses exclusively on “Adaptation Strategies.” The chapter can be found at:

<http://www.flclimatechange.us/ewebeditpro/items/O12F20146.PDF>

17. *How is the U.S. Army Corps of Engineers doing with guidance to prohibit the current amount of fill in wetlands (both public lands and private) ex. housing in Coastal areas. Or to increase/add buffer zones to adapt to increased flooding in areas where wetlands are being permitted to fill?*

Answer: This question is best answered by the U.S. Army Corps of Engineers. Information about the Corps’ responses to climate change and adaptation efforts can be found at:

<http://www.corpsclimate.us/adaptation.cfm>

18. *What are the best sources of information relative to state-level adaptation to climate change in terms of forest policies and practices?*

Answer: A report from the Pew Center on Global Climate Change provides an overview of what U.S. states are doing on adaptation planning. The report is entitled, “Adaptation Planning – What U.S. States and Localities are Doing.” The report is available at:

http://www.pewclimate.org/docUploads/State-Adapation-Planning-02-11-08_0.pdf

19. *How is the EPA working with the CDC and NHTSA on presenting health data associated with climate change?*

Answer: The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. EPA is a member of the USGCRP. Within the USGCRP, the Interagency Crosscutting Group on Climate Change and Human Health (CCHHG) is charged with planning, coordinating, implementing, evaluating, and reporting on federal research and related scientific activities on the human health impacts of global environmental change. The CCHHG integrates relevant science and technology programs and capabilities through interagency, interdisciplinary, and intergovernmental collaborations spanning basic research to decision making to application. The ultimate goal is to build

communities that are healthy and resilient to climate change impacts. EPA Co-Chairs the CCHHG and actively participates along with CDC and other federal agencies.

20. *Could EPA please suggest who are potential allies in terms of climate adaptation and mitigation in Alabama?*

Answer: It is not appropriate for EPA to suggest “potential allies” for advancing adaptation and mitigation strategies and policies.

21. *Are resources available that specifically address coastal cities and regions?*

Answer: Extensive information and resources address the potential impacts of climate change on coastal cities and regions (particularly because of their vulnerability to sea level rise). An excellent starting point is the U.S. Global Change Research Program (USGCRP), which coordinates and integrates federal research on changes in the global environment and their implications for society. In 2009, the USGCRP released a major report entitled “Global Climate Change Impacts in the United States.” This report contains information on the risks posed to coastal communities, and has an entire chapter devoted to “Coasts” (pages 149-152). The report can be found at:

<http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>

David Ropeik

22. *Are there statistics available for approximate percentages within the general population of how many people fall into the Individualist/Communitarian, Hierarchist/Egalitarian categories, and how might knowing such information/studies help us communicate climate change-related issues? And are these percentages trending or changing?*

Answer: As best I know general statistics on where people fall on the two continua of cultural cognition don't exist, and at the local or even regional level general statistics would be meaningless anyway, since there is so much local variation. What's important is to understand and respect this aspect of the population with which you're concerned. To get a sense of what kinds of people fall where on which continuum, so you can “read” your local community more intelligently, I suggest reading a couple of the fascinating papers at www.culturalcognition.net, particularly the Second National risk and Culture Study (<http://www.culturalcognition.net/projects/second-national-risk-culture-study.html>), and looking at my slides with the questions the surveys ask to identify where people fall on the continua. Also read Chapter 4 in “How Risky Is It, Really”, which starts with a detailed scenario about four different “types” of people arguing about climate change. That will help you develop more of a sense of what kinds of folks are more individualist or communitarian, hierarchist or egalitarian.

And don't forget the large group of people who may think climate change is real, but aren't really personally worried enough to be ready to support measures to adapt. So much attention gets paid to the deniers, but this other group is the majority.

23. *Do you think that the human made vs. nature risk concern is a reason why deniers tend to argue that we are not causing climate change?*

Answer: Deniers often make the case that the changes happening to climate and weather are natural, ergo there is no big problem we have to deal with, but that is more an argument against mitigation than against adaptation. Regardless of why the weather is changing and whether we can do anything about that, if the changes are causing harm we'll want to do something about to protect ourselves.

But this is a good example of a more important point. I think climate change denialists instinctively invoke such arguments from the psychology of risk perception to make their case, (it's natural, therefore there is nothing we need to do, or we can control things and adapt, so it's not that big a worry, or we don't trust the sources of the information), and frankly, the true believers do the same thing (it threatens our children, it's human-made, we don't trust the industries creating a lot of the problem). But the true "source" of these arch positions is more a matter of culture and tribe...the unconscious influence of cultural cognition. The specific arguments about climate change about the facts and specific emotional/psychological characteristics like those I just mentioned, are just the cognitive expressions, the veneer, of opinions that really come from the deeper place of wanting our views to conform to our group's opinion, so our group will prevail, and provide us the security of acceptance as a member in good standing.

(Much more on this in a guest post I wrote for ClimateCentral.org, at http://www.climatecentral.org/breaking/blog/climate_change_literacy_wont_be_enough)

24. *How do you overcome the fact that Climate Change has become a political football as reflected by the fact that, according to a recent survey, the belief in anthropogenic climate change has fallen from 79% to 59%, with most of the shift taking place in conservative republican ranks?*

Answer: Again, this question seems to be about making everybody believe climate change is real. Which would be great, but isn't necessary to achieve the goal we're talking about here...encouraging public support for measures that will help us adapt to changes in our weather and climate. And again, this question focuses on the minority that denies climate change, with the danger that the noisy debate draws focus away from the problem getting the majority that thinks climate change is real to care enough so they'll support doing something about it, whether adaptation or mitigation.

To the question specifically, I suggest that public opinion is always shifting depending on various circumstances. Belief in climate change went up after Hurricane Katrina, for example, which made the possibility of such storms concrete rather than abstract. Currently, I suggest that the uncertainty of our economic circumstances makes people worried, and that makes them identify more strongly with their groups as a form of safety. Which would explain why lots of issues, not just climate change, seem more polarized. Which of course then explains why there is more change among republicans, who much more often self-identify as hierarchists and individualists.

I blogged on this at Huffington Post; “Americans are not Angry, but Worried”
http://www.huffingtonpost.com/david-ropeik/americans-arent-angry-wer_b_783318.html

25. *How do you separate audiences - between believers and deniers? State agencies produce materials (blog stories, fact sheets, etc) for audiences across the state and many local communities.*

Answer: There are more than just those two audiences. As I mentioned in answers to other questions, one big overlooked audience is the majority that thinks climate change is real but is not personally threatened enough to care enough to be ready to support investments in adaptation or mitigation.

In the communication advising I do, one of the steps I urge clients take is to identify the goal of a risk communication/relationship management program; what do you want to accomplish? Do you want to ‘educate’ people, which often means getting them to think and do what you want them to think and do? Or do you want to establish trustworthy constructive relationships with people, in my opinion a more achievable goal. If you’re focus is on adaptation, you might set a goal *not* to convince the deniers, but to build support for adaptation by bringing the parties together on steps both sides can agree on as beneficial, whether for climate change adaptation or energy savings or cleaner air or safer water supplies or less flooding, etc. It starts with the goal.

(As I stated above, In my opinion, convincing deniers should not be the goal. You’re fighting something much deeper, cultural forces, than just the issue of climate change. It is hard to get people to change at that deeper level.)

Having set the goal, pick specific target audiences you really hope to influence the most...with whom you most want to have a constructive working relationship. Even a statewide campaign that speaks to everyone at once can use messages and actions, and communication channels, that are really aimed at one audience or another.

Next, identify the specific channels that would work best to reach those communities. Mass media, social media, one-on-one meetings or group meetings with local people...some channels work better for specific audiences than others.

Finally, once those factors have been identified, you can choose actions and messages that best target the identified specific communities to achieve your overall goal. And those actions and messages must be couched in the psychological language relevant to your audience, the risk perception factors and cultural cognition factors I talked about in my presentation and which are discussed in the blogs I mention above.

26. *When communicating climate change to a diverse community, what is the best communication strategy to engage both the "believers" and the "deniers"?*

Answer: See the two answers above. And don't forget the majority, the believers who aren't all that worried.

27. *In communicating climate change to a diverse community, what is it better: to focus or incorporate more "denier" language or have two different schemes- one for "believers" and one for "deniers"?*

Answer: Also see above.

28. *How do you see the risk perception related to GHG emissions which is a global problem? Not a local problem.*

Answer: Great question. You can make any aspect of this global problem, local. The cause of the problem, emissions that change things globally, happens locally. The potential harms impact people at the local level. Global climatic changes could mean sharp changes in local weather; heat, cold, flooding, drought. Influences on global agriculture could change prices and availability in the local food store. Rising seas worldwide can obviously be made local anywhere on the coast. It IS a local problem. Both the mitigation, and certainly the adaptation, need to be done at the local level.

29. *Regarding behavior - How can we possibly tell people at this point we know exactly what will happen to them on their street with the data sets that we have? We have state level impact data.*

Answer: You are right to be careful about being too specific. Trust and credibility are vitally important in establishing constructive supportive relationships around emotionally-fraught risk issues and you don't want to risk them by being too precise in your predictions only to have them not come to pass. Even at the regional level, we are only starting to know with any specificity what climate change might lead to...and not with absolute certainty either. So to get street-level local is risky. But "local" can mean statewide, or regional (which is better, since the weather doesn't know where the legal boundaries lie anyway!) That's still a much more intimate "where I live" level that people can relate to than "global". When possible, you can get really local; along coasts, flood plains, etc.

Also, what level of threat do we use to communicate? What if we use the worst case and it doesn't happen- worst case? What if we take the best case, lowest level, and the worst happens? How do you communicate risk perception in the face of such uncertainty?

Answer: I think the IPCC has done a decent job with this. They talk about ranges of what's possible, and ranges of likelihood and certainty about each of those outcomes. They don't just use the worst case or take the "best case" They include the range of what is plausible.

Some people worry that if they aren't certain they can't make a convincing argument. I disagree. We rarely wait for certainty before acting on any risk. We buy insurance against

plausible but uncertain outcomes, for example. We don't have to be SURE there will be a flood before acting to reduce the risk. We do that all the time. We don't have to be ABSOLUTELY CERTAIN there will be less snow, and therefore less spring snowmelt/water, to start to plan for now to replace the water (or the hydropower) such an outcome could produce, if there is plausible evidence it's possible. Prudence doesn't require certainty, nor worst case scenarios.

30. *Suppose we frame the perfect messages for our communities and states? Do you have recommendations for how to keep them from getting lost/forgotten in the massive amount of messaging that comes people's way every day? How do we get them to remember and keep it top of mind without scaring them to death?*

Answer: In my opinion some climate change communication has been alarmist because the communicators are frustrated by lack of public concern and want to alarm people into caring, and they think the BIG alarm is what's needed. It may be needed, but it may NOT be the best way to get people to care/act. So first, I would say that alarmism is probably counterproductive with many audiences.

Second, there is a difference between fear and reasonable concern, a difference between panic and prudence. Communities plan against the possibility of bad things happening all the time, in all sorts of ways, without being "scared to death". Vigilance and planning to account for potential harm are standard practice.

In terms of keeping things "top of mind" against all the other things people have to pay attention to...we all keep a pretty constant eye on things we think have a reasonable chance of doing us harm. It's natural. Something we're really worried about doesn't have to fight to stay top of mind. It'll do it by default.

This is why I'll repeat what I suggested earlier; too much attention is being paid to changing the minds of the deniers, and not enough is being paid to getting the majority that believes climate change is real, to care enough. That's why I said in my presentation that a real challenge with climate change is portraying it, honestly and realistically, in local and personal and current/imminent terms. Right now most people don't think climate change will do anything really bad *to them*. If they do, you won't have much trouble getting them to maintain their concern about it.

31. *Treating interpretation as "facts" does not work out so well and physics does not "care" about risk. So, should we let risk just take care of itself?*

Answer: Risk *perception* is not a matter of physics. The facts are indeed lifeless ones and zeroes in and of themselves, but run through the software of our perceptions/instincts/emotions, and our inherent drive to survive, they take on a meaning which compels us to "care". As to the observation that interpretations aren't facts...true, but interpretations are all we have to go on. Herbert Simon coined a wonderful phrase for this..."*bounded rationality*"...to suggest that we make decisions under conditions that limit - bound - our ability to be perfectly rational; we usually don't have all the facts, or

all the time to get them, or all the smarts to understand them, before we have to decide. We interpret everything into the choices and judgments we make and the way we live. Unless you want to cede your ability to influence what happens to you next. In which case...I admire your Buddhist enlightened ability to ‘let go’.

32. *How do we credibly explain the confidence level of our temperature projections? Can we say that statistically there's X% confidence that the temperature will increase by a range of A degrees to B degrees by 2100 and, if so, what are those numbers and what are they based on?*

Answer: The IPCC does a pretty good job of this, with the language they use to define their degree of certainty. Check out some of their reports. (Example; In Working Group Two, which includes adaptation, they put asterisks next to their statements based on this guide;

Level of confidence in the whole statement:

*** Very high confidence

** High confidence

* Medium confidence

But I wouldn't worry about how to frame global temperature changes 90 years from now. People don't care about the global temperature increase, nor how hot or cold it will be in 2100. They care about the weather where they live, now, and tomorrow.

33. *Do you have specific suggestions for communicating climate change issues and adaptation to group of local ranchers who make their living off of the land in the western US?*

Answer: With *any group* I would try to understand before trying to be understood. Local ranchers have a powerful interest in the natural systems on which they depend. Engage them in conversation to listen to their concerns; not about climate change per se, but what's going on with the weather and water supply and soil conditions and how it's impacting them, and what their thoughts are. Also, in terms of cultural cognition, I would expect ranchers would more likely be individualists (government should mostly butt out) than communitarians (we're all in this together), and I would ask them for their views about how to work toward solutions to their concerns. Those conversations can go a long way toward building respect and trust and a constructive relationship, and identify the actions and messages that will encourage adaptation the best.

34. *Once we figure out how to effectively frame our messages, do you have specific recommendations for how to cut through the clutter of all the other messages out there so ours will be heard, internalized, remembered and acted upon?*

Answer: See question 30

35. *Does it work to pair up messages targeted at different segments of your audience that have different attitudes/perceptions/beliefs?*

Answer: I'm not sure what you mean by "pair up". If you mean pairing messages for the believers and the deniers, I'm not sure how far that would get you. What works - by which I mean, what treats people respectfully and builds trust and more constructive relationships and thus enhances your influence - is to respect the concerns and perspectives and psychologically important factors of the audiences you care about and develop actions and messages in the context of those unique concerns. Talk to each audience individually if possible. There are lots of channels and ways to do that.

36. *How to reach the deniers, given that facts are not effective.*

Answer: As I said in my presentation, I am powerfully persuaded that the folks who deny climate change, and the most ardent believers, see the evidence through the perspective of their underlying cultural world views. That would explain why we see such virulently competing views of the same set of facts. Both sides genuinely see the specifics of the issue through the lenses of how they think society should operate. So each group cherry picks the facts that fit the view of the issue that will support the views of the groups with which they identify.

Your question about how to "reach" deniers implies "how to convince" the deniers. Again, I think that's a self-limiting approach that hurts trust and limits your influence. Rather, I suggest you need to respect the power of these cultural influences, not try to change them. That will help you frame the issue through the lenses with which people see the issue. Respecting, rather than battling, where people come from, will give you more respect, and trust, and influence.

For example, in an experiment on cultural cognition, Kahan et. al showed people a story about the facts on climate change, described by neutral scientists. Both stories said the solution requires more nuclear power and were identical, save for one sentence. One version said that approach would rejuvenate the nuclear power sector of the economy. Another version said to increase the contribution of nuclear power we would need more anti-pollution regulation. The heirarchists and individualists, people who support the status quo and existing authority and market structures and less government interference, were readier to accept the facts about climate change if they read the version about how it might be good for a sector of the economy, compared with the heirarchists and individualists who read the "anti-pollution regulation" version. Something that portends more regulation doesn't sit well with those folks, and they were more resistant to the facts about climate change. And after reading the two versions of the story, the egalitarian/communitarians who read the version about rejuvenating the nuclear power industry had slightly less support for the idea of climate change, and those that read the "more regulation" version had more. (See pp 7-9 of the paper at <http://www.culturalcognition.net/projects/second-national-risk-culture-study.html>)

By the way, it is telling to me that when I describe this phenomenon of risk perception in my writings, both sides deny that their subconscious underlying worldview is shaping their views. Both the deniers and ardent true believers respond by saying, in essence, that they're right *on the merits*, and their beliefs are supported by 'the truth', and this other stuff is psychobabble. But in Kahan's work, if you ask people to identify themselves on the cultural cognition continua, and ask them about their other demographics, where they fall on, the cultural continua is 70% more accurate in predicting their positions on climate change than their political affiliation, and 90% more accurate than their gender.

So as I've suggested in other answers, the argument about climate change really isn't about the facts at all, or even about climate change per se, and "reaching" people in order to change their thinking when that thinking is motivated by such deep subconscious roots is not the more respectful way, nor the most successful way, to encourage constructive relationships around adaptation programs which have worthwhile benefits for other reasons than dealing with climate change.

Brendan Reed

37. *How did you come up with the "likelihood" and "consequence" number assignments in the planning matrix?*

Answer: The "likelihood" scores were based on technical input from regional experts and researchers, while the "consequence" scores were based on City staff input concerning infrastructure costs etc.

38. *How much staff time and resources did Chula Vista commit? How long did it take from start to adoption?*

Answer: Staff time was mainly limited to a manager-level professional working approximately 10 hours per week for 12 months. In addition, other City staff were involved only as needed (approximately 5 staff at 10 hours total each).

39. *If your adaptation strategies were focused mainly on what the City can do to respond to climate change, do you have any plans/suggestions on broadening that discussion to support the community taking actions on their own? Or creating public-private partnerships to implement projects?*

Answer: The climate adaptation strategies really lay the groundwork for private-public workshops.

40. *What kind of input was gathered at the public open house? At what stage in the process did you conduct the open house(s)?*

Answer: The public open house was held after the Climate Change Working Group had finished its information gathering stage and before the group began to evaluate and prioritize adaptation options. We created posters for each adaptation focus areas and had public participants vote (using a sticker) for climate actions which they supported etc.

41. *How is Chula Vista participating in the Integrated Regional Water Management Program and how climate change is getting incorporated into the IRWM plan?*

Answer: One of the 11 climate adaptation strategies recommended by the City's Climate Change Working Group focuses on stormwater management. As staff prepares more detailed implementation plans for the strategies, I would predict that the IRWM plan will be integrated into the City's plans.

42. *How does the adaptation plan connect with city's general plan process?*

Answer: One of the 11 climate adaptation strategies recommended by the City's Climate Change Working Group focuses on revising "the City of Chula Vista's Land Development Ordinances (such as Grading Ordinance) and CEQA Guidelines to incorporate climate change-related sea level rise & other flooding risks into future development and municipal infrastructure projects' design and review."

43. *What are the efforts by the city on the revision of existing TMDLs to climate change? How are the local researchers involved on the planning? Are there studies on the sea level rise on the development planning of Chula Vista? What is the city's perspective on these issues in the current economic conditions?*

Answer: The City's Climate Change Working Group was presented with lots of information on the impacts of climate change on our community. I would suggest that you check out the City's climate action planning webpage (<http://www.chulavistaca.gov/clean/conservation/Climate/ccwg1.asp>) to review the various presentations etc.

44. *Do you think it's easier to get local folks to rally around adaptation because it has actual local impact, vs. mitigation which can have small fish in a big sea issues?*

Answer: I actually don't think that the general public really makes a distinction between climate mitigation versus adaptation efforts.

45. *Can you please provide some examples of adaptation, not mitigation, practices that are being used?*

Answer: Below are the Climate Change Working Group's 11 adaptation strategies (bolded items are both adaptation and mitigation measures):

1. **Develop an ordinance incorporating reflective paving (or "Cool Paving") into all municipal paving projects (parking lots & streets) and new private parking lot projects (over a specific size).**
2. **Develop an ordinance incorporating shade trees into all municipal projects (parking lots & streets) and new private parking lot projects (over a specific size). The new ordinance should include a deviation for solar carports (or other shade structures), be complementary to existing free tree programs, and**

potentially be incorporated into the existing Landscape Water Conservation regulations.

- 3. Require and provide incentives (such as contributing to City's enhanced energy code requirements) for new residential development with air-conditioning systems to install ENERGY STAR cool roof technology.**
- 4. Educate residents and businesses about the benefits and appropriate uses of local water supplies (including recycled water, groundwater desalination, and onsite water reuse systems) and further integrate recycled water (if available) and onsite water reuse systems into new development and redevelopment plans.**
5. Revise the City's stormwater regulations and applicable landscape/building codes to efficiently manage higher concentrations of pollutants in runoff by minimizing water waste, using natural landscapes which help drain or reuse runoff, and by ensuring that irrigation systems are properly installed/maintained.
6. Actively educate the general public and the business community (through community newsletters, websites, public events, and signage) about the impacts of climate change and what the community is doing to address impacts. In close coordination with the Fire Department, special emphasis should be given to using existing outreach mechanisms (Southwestern College's Services Learning program, Americorps/CERT training, and City environmental outreach programs) to expand public education on making homes more resilient to wildfires.
7. Include "extreme heat" events as a significant emergency in Chula Vista's Emergency Response Plan (short term) and its portion of the County's Multi-Jurisdiction Hazard Mitigation Plan (long term), and redefine "extreme heat" events with a special emphasis on serving vulnerable populations, supporting a robust network of "Cooling Centers", incorporating poor air quality day notifications, educating businesses about employee heat illness risks, and integrating renewable energy sources into emergency/cooling centers.
8. In order to assess and reduce impacts associated with climate change on parks and open space and their associated ecosystems, seek opportunities to partner with the Resource Agencies, non-profit organizations, and/or adjacent public land managers to monitor and manage/restore ecosystems (as funding becomes available) to ensure long-term habitat connectivity, species resilience, and community recreational opportunities
9. When preserving or restoring coastal and riparian wetlands, incorporate adequate upland or transition habitats to accommodate shifts in wetlands coverage and help ensure public access due to sea level rise and other climate change impacts as informed by biological studies and Resource Agency consultation.
10. Use the outcome of the current San Diego Bay Climate Adaptation Study (being sponsored by the San Diego Foundation and ICLEI) to revise the City of Chula Vista's Land Development Ordinances (such as Grading Ordinance) and CEQA Guidelines to incorporate climate change-related sea level rise & other flooding risks into future development and municipal infrastructure projects' design and review.

11. Provide assistance and non-monetary incentives to help businesses manage climate change risks and to attract businesses that provide "green" products or services into Chula Vista.

46. *I am assuming Chula Vista is also a non-attainment area for ozone? If so, what air quality issues did they integrate into their workshops?*

Answer: Ozone levels in Chula Vista are generally lower than many other areas in the region. Air quality was only discussed to the extent that hotter air temperatures from climate change will increase ground-level ozone and reduce ambient air quality.

47. *How did Chula Vista work with or around the city's current mitigation work to implement adaptation strategies? Did they go through a review process of existing policy in the 7 key areas and add adaptation language where appropriate? Some of our decision makers are understandably reluctant to "re-do" current policy, preferring to stay the course (thereby saving time and money).*

Answer: Staff made a conscious effort to avoid any new climate adaptation strategies which were redundant or conflicted with the City's existing climate mitigation measures. I think that an important first step in a climate adaptation planning process is to educate local government leadership about the difference between the adaptation and mitigation and to emphasize that both are complementary.