# RESOLVE REPORTS: CLIMATE SCIENCE COMMUNICATIONS ASSESSMENT – Full Report



An analysis of decision-maker perspectives and needs with regard to climate science and current climate science communications capacities. This report was prepared by RESOLVE (<u>www.resolv.org</u>) for the Hewlett Foundation and the Packard Foundation and is designed to benefit interested stakeholders.

## RESOLVE

February 2012

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#### RESOLVE

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#### **Executive Summary**

#### Need

Recently, significant resources have been invested by foundations, policy and advocacy organizations, and academia to bolster capacity to communicate climate science. This assessment seeks to understand current climate science communications capacity and stakeholders' needs in light of the shifting terrain on climate issues.

This is not a report on communications messages. It is not written for a particular constituency in the debate over climate issues and climate policy. The paper seeks to understand the views and needs of key actors and constituencies—impacted by and concerned about climate issues. The paper focuses on answering three questions:

 What do decision makers need? We sought to understand the climate science information needs of selected decision makers in government and business, taking into account the shifting terrain on climate issues including criticism of climate science.

2. What capacity exists?

With new resources and programs focused on communicating climate science, we surveyed the landscape and present a snapshot of current initiatives.

3. Are there unmet needs and new opportunities? We identified potential issues, implications, and opportunities for further consideration by key stakeholders in government, business, the philanthropic community, and civil society.

#### <u>Approach</u>

There were two aspects to our research:

- a <u>needs assessment</u>, in which we interviewed more than 40 decision makers in government and business, or those with close ties to decision makers, and sought to better understand their needs with regard to information on climate science;
- a <u>landscape survey</u> of nearly 50 initiatives, including interviews with 30 practitioners and communications experts, and survey results from 28 initiatives, from which we described and categorized the current landscape of climate science communications initiatives (focusing on their strategic role, posture, and capacity) using the needs and views of decision makers as a lens.

#### **Decision Maker Findings**

Themes began to emerge from the needs assessment that enabled us to develop summary findings that highlight similarities in views across decision-maker groups. The main findings from the decision-maker assessment, which are described in detail in Section 2, include:

- 1. Causal Science is Sufficient and Accepted by Decision Makers
  - a. Decision Makers Need and Use Climate Science
  - b. Criticism of Science Didn't Alter Decision Maker Views, but Did Unsettle Key Constituencies
  - c. Climate Science is One of Many Policy Drivers, and is Unlikely to Drive Policy by Itself
- 2. Credible "Go-To" Sources Exist
  - a. Decision Makers Have a Sophisticated Sense of Science Sources and Draw on Sources Beyond the IPCC

- b. Independence is Essential; Advocacy Sources are not Useful
- c. De-politicized Science Communications is Valued and Should be Pursued
- 3. There is an Interest in More "Accessible, Usable Science"
  - a. This Includes "Granular" Science (i.e. focused on localized impacts) Useful to Target Constituencies
  - b. Science Should Support Work on Mitigation and Adaptation
  - c. Businesses are Seeking More Actionable Data

#### Landscape Survey Findings

The landscape survey resulted in the following key findings, as described in detail in Section 3:

- 4. There are Benefits to Better Aligning Communications Capacity and Decision-Maker Needs
  - a. The Field Expanded Quickly, with Many New Initiatives
  - b. Most Initiatives are Based in or Linked to the Environmental Community
  - c. Current Assumptions and Targeting are Not Fully Aligned with Decision-Maker Needs/Views
  - 5. Strategic Coordination Can Help Respond to Needs, Close Gaps, and Address Inefficiencies
    - a. The Majority of Initiatives are Small, with Limited Capacity
    - b. Despite the Proliferation of Initiatives, Gaps Exist
    - c. The Initiatives are Fractured with Limited Coordination

#### **Potential Implications and Opportunities**

We then tried to understand key strategic elements of the communications platforms (or initiatives) that we surveyed and compare those to our understanding of the strategic dimension of the information we gathered from decision makers. Through this analysis, we identified the following potential implications and opportunities, which are described further in Section 4:

- For Decision Makers, There is an Interest in Information that Moves beyond Defense of Causal Science to a Focus on More Granular Science (on Mitigation and Adaptation)
- Move Away From Advocacy Science (for Decision Makers), Toward Collaborative Science
- Diversify Science Communications: Encourage Others to Communicate
- Understand and Focus on the Business of Climate Mitigation and Adaptation
- Coordinate Strategically Across Initiatives to Bolster Effectiveness and Improve Efficiency

#### Options that Set the Stage for Next Steps

In our research, we interviewed two distinct but overlapping groups clustered around two distinct sets of interests and needs. We recommend that any follow-up dialogue takes this into account. The overall findings are likely to be useful to both groups, but in terms of next steps, each group has fairly distinct needs, at least in the near term.

For Climate Science Communicators:

- Share and Discuss Report with Interested Funders
- Facilitate Dialogue to Discuss Findings and Next Generation Science Communications, Supported by Report and Strategic Tools

For Decision Makers:

• Hold Collaborative Climate Science Dialogue on Causal Science and Other Science Needs

#### **Understanding Climate Science Communications Initiatives**

To provide a framework for understanding various initiatives, we used a strategic assessment process to understand key strategic elements and reviewed these against the expressed needs of

decision makers. We did not evaluate initiatives or their strategies but we were able, to some extent, to compare the approach to the stated interests and views of decision makers.

While we found some misalignment between current initiatives and decision maker needs, we also identified potentially important opportunities—including the potential to factor these findings into future planning. We found that leaders in the climate science communications field have an appetite for additional strategic discussion. We also found keen interest among a wide range of decision makers in participating in any future dialogue, with the potential to use science to open up space for policy making.

#### 1 Introduction

#### 1.1 Need

Decision makers on climate-related issues in both government and business are influenced by many factors, one of which is science. The relative influence of climate science on decision makers is a point of debate, and there is evidence that political or cultural orientation may be an important factor in determining attitudes toward this issue.<sup>1</sup>

Recently, significant resources have been invested by foundations, policy and advocacy organizations, and academia to bolster capacity to communicate climate science.<sup>2</sup> This assessment seeks to understand current climate science communications capacity and stakeholders needs in light of the shifting terrain on climate issues. This shifting terrain in the U.S. includes a severe, long-term economic downturn; increased polarization on a number of other national policy issues such as health-care, immigration and budget and financial measures. It also includes significant media coverage of disputes over climate science and shifts in public opinion on climate issues and reforms.

#### 1.2 Goals

Our research tried to investigate three fundamental questions:

1. What do decision makers need?

We sought to understand the climate science information needs of selected decision makers in government and business, taking into account the shifting terrain on climate issues including criticism of climate science.

2. What capacity exists?

With new resources and programs focused on communicating climate science, we surveyed the landscape and present a snapshot of current initiatives.

3. Are there unmet needs and new opportunities? We identified potential issues, implications, and opportunities for further consideration by key stakeholders in government, business, the philanthropic community, and civil society.

#### 1.3 Approach

To answer these questions, we considered three groups of actors in the climate science communications realm (see Figure 1 below):

- those seeking to distribute and communicate information on climate science (characterized as inputs in Figure 1);
- those serving as information gatekeepers and influencers; and
- those who may use climate science information when making decisions related to climate change.

<sup>&</sup>lt;sup>1</sup>Kahan, Dan M., Fixing the Communications Failure (June 24, 2010). Nature, Vol. 463, pp. 296-297, 2010. Link.

Kahan, Dan M., Jenkins-Smith, Hank and Braman, Donald, Cultural Cognition of Scientific Consensus (February 7, 2010). Journal of Risk Research, Vol. 14, pp. 147-74, 2011; Yale Law School, Public Law Working Paper No. 205. Link.

<sup>&</sup>lt;sup>2</sup> In our research we made a distinction between advocacy and policy organizations, with advocacy organizations having a clear policy agenda that they are actively promoting with decision makers and policy organizations focused primarily on analyzing and developing policies with little focus on lobbying or pushing decision makers. For example, we treat World Wildlife Fund as an advocacy group because they focus on advocacy, although they also do policy work. We treat Resources for the Future as a policy organization, as they focus on exploring policy options; while this work may influence decision makers through papers and briefings, RFF does not actively advocate a particular policy approach.

While the role played by gatekeepers/influencers is important, we made a strategic and resource decision to focus the majority of our research on the inputs (i.e., those generating the information intended to inform) and the decision makers and those working directly to support decision makers (i.e., those who can influence climate-related policy, planning, and business practices). While acknowledging that the significance of science in decision making on climate is not agreed-upon, we worked from the premise that it is still important to understand and assess what decision makers say about the role of science and its impact on key constituencies.



Figure 1: Actors in the Climate Science Communications Realm

The specific components of our research and analysis, as described further below, included:

- A needs assessment, in which we interviewed more than 40 decision makers in government and business, or those with close ties to decision makers, and sought to better understand their needs with regard to information on climate science;
- A landscape survey of nearly 50 initiatives, including interviews with 30 practitioners and communications experts, and survey results from 28 initiatives, through which we described and categorized the current landscape of climate science communications initiatives (focusing on their strategic role, posture, and capacity).
- From this we were able to identify potential implications and opportunities, including gaps with regard to fulfilling the needs of decision makers.

#### Needs Assessment

We talked to more than 40 decision makers in business or government or those with close ties to decision makers. For business leaders, we defined decision-making as efforts to influence public policy <u>and</u> internal business decisions with impact on climate issues. We reached decision makers with diverse interests, histories, and perspectives on climate issues, but we did not intentionally interview decision makers who lacked an interest in or use for climate science.

While our sample size was not representative of a particular sector or interest and we did not vet statements made by decision makers against their past or current policy views or actions, we did reach a point in our research where patterns began to emerge and views were repeatedly confirmed. We also heard from decision makers as to their perceptions of shifts in the terrain

around climate science: what had changed, what had not, and where challenges and opportunities might exist. While our research approach was not exhaustive, we are confident that we have identified a number of useful insights.

#### Landscape Survey

There are hundreds of initiatives, government bodies, businesses, nonprofits, academic institutions, and others focused on raising awareness of the problems and solutions associated with the global challenge of climate change. The landscape survey focused on characterizing as many of these initiatives that work to communicate climate science as we could identify, with a particular focus on causal science and climate impact science rather than science or analysis related to adaptation and response to climate change. While we tried to capture information about most of the most active initiatives, due to limited time and resources, our list is not exhaustive.

To develop a list of target initiatives, we drew from our team's knowledge and then spoke with key leaders in the field to identify others. These were leaders from the foundation community, media experts, NGOs, government, industry and academia. As the assessment progressed, we added any initiatives mentioned by decision makers. To better understand these initiatives, we sent an electronic survey to more than 50 organizations (and received 28 responses). We interviewed 30 practitioners to supplement the electronic survey results and ensure that we were not missing important information.

Using the information we gathered, we grouped initiatives by type, primary roles, capacity, and other characteristics, as presented in Section 3. In doing so, we recognize that we may be making some judgments based upon incomplete information.

It is important to note that this research is neither a comprehensive catalog nor a thorough evaluation of the initiatives, and we did not analyze the quality or nature of the specific information sources we surveyed. <u>Our results are only as good as the information we were provided in interviews and our survey</u>. <u>Our level of confidence is high with regard to the generalized findings that are the heart of this report</u>. We also identify areas where more focused research is needed and may be beneficial.

#### **Implications and Opportunities Analysis**

Using the information we acquired through the needs assessment and landscape survey, we conducted an analysis of how the two information sets informed each other. Based on this analysis, we drew out the potential implications, including any gaps, and subsequent opportunities for the field of climate science communications. Some of our findings are fairly definitive, while others will need additional analysis.

#### <u>Scope</u>

This was not an assessment of climate science nor was it an assessment of climate advocacy or effective messaging. This project did not develop or evaluate science-based messages on climate change or assess the pros and cons of using a science-focused strategy.

We used structured interviews with leaders in the area of climate science communications to understand their thinking and assumptions, and we used interviews with decision makers to understand their needs.

In order to ensure a focused result within resources and a limited time frame, we put limits on the project scope. We focused on a precise target—climate science communications, we limited our

geographic scope to U.S. based initiatives and had a particular focus on science related to the causes and impacts of climate change rather than adaptation to climate change. While necessary, the limitations on scope sometimes presented challenges.

The U.S. focus sometimes broke down because of the difficultly fitting climate issues into a geographic box. For example, while many platforms are U.S. based, they have reach outside the U.S. Likewise, a number of decision makers have authority or a role on global policy. With regard to our research, we did not, for example, consider positive or negative repercussions from communications strategies focused primarily in the U.S., and we did not seek to understand differences among decision makers based in the U.S. as compared to Asia or Europe. Most of our government decision-maker interviewees were U.S. focused. We did gain insight from business decision makers with a role in global climate policy. We also heard from communications leaders in Europe that they thought they could learn from this research. These and other issues may warrant additional investigation to better understand differences, implications, and opportunities.

We made an effort to focus our discussions on science related to the causes and impacts of climate change, but it was difficult to limit the discussion in this way when so many of our interviewees were deep into considerations of adaptation and response, had strong opinions about its importance, and often highlighted the fact that causes, impacts, and adaptation are inextricably linked. Therefore, we have useful information on science communications related to causes, impacts, <u>and</u> adaptation.

#### Neutrality and Confidentiality

To ensure participants in this assessment had a "safe space" to share open and honest opinions, information, and frustrations, we did not assert a premise or position as to what constituted success or effectiveness with regard to policy or climate science communications, nor did we assume that a particular organization, actor, or set of interests held this answer. We offered confidentiality to all participants and do not attribute any findings or quotes to any specific individual or organization unless authorized to do so.

#### 1.4 Assessment Team

This assessment was conducted by RESOLVE, in partnership with Kristin Hyde, a communications expert. The core team included Steve D'Esposito, President, RESOLVE; Kristin Hyde; Kevin Curtis (who participated in this assessment and served as an independent advisor); and Lauren Flinn, Senior Program Associate, RESOLVE. The RESOLVE team brought expertise in strategic assessment, particularly when work is being undertaken across different stakeholder groups and constituencies. Kristin Hyde has expertise in understanding communications programs and strategies. Our team is experienced at protecting confidences while sharing key findings.

We were also advised and supported by Lynn Scarlett (as an external advisor during project planning); Paul De Morgan, Senior Mediator, RESOLVE; Kate Kopischke, Senior Mediator, RESOLVE; Jason Gershowitz, Program Associate, RESOLVE; Tim Sandusky, Program Associate, RESOLVE; and Brian Mattes, Research Fellow, RESOLVE.

#### 2 Decision Maker Findings

In talking with more than 40 decision makers in business or government or those with close ties to decision makers, themes began to emerge that enabled us to develop summary findings that highlight similarities in views among decision makers. (See Appendix B for the list of decision

maker interviews.) Before addressing these themes, some areas of divergence are worth noting. These include the following:

- U.S. based government decision makers tend to think within the context of the U.S. political calendar, while business decision makers tend to think over a longer-term time horizon.
- While government decision makers see the short to medium term as challenging with regard to climate policy, they are actively thinking about the longer term and engaging constituencies today with that in mind. Corporate decision makers are typically making business decisions as if policy change will happen in the medium to long term, but they are less actively cogitating on the now—for companies the climate policy file is generally in the "B" pile.

Figure 2 below summarizes the demographic profile of the decision makers we interviewed. It is categorized by overall type (business or government) and specific sector (i.e., the nature of their business or the branch or location of government). It is meant to provide an overview rather than a precise number, particularly because a number of decision-maker interviewees were able to provide information from more than one perspective—e.g., a corporate official who also served in senior government positions. Under government, we highlighted agriculture as a separate sector as we were able to gather significant information from agriculture-focused decision makers. The decision-makers we interviewed come from a fairly wide spectrum of policy perspectives, constituencies and political orientations.



Figure 2: Demographic Profile of Decision Maker Interviewees

The main findings from the decision-maker assessment, which are described in detail below, include:

- 1. Causal Science is Sufficient and Accepted by Decision Makers
  - a. Decision Makers Need and Use Climate Science
  - b. Criticism of Science Didn't Alter Decision Maker Views, but Did Unsettle Key Constituencies
  - c. Climate Science is One of Many Policy Drivers, and is Unlikely to Drive Policy by Itself
- 2. Credible "Go-To" Sources Exist
  - a. Decision Makers Have a Sophisticated Sense of Science Sources and Draw on Sources Beyond the IPCC
  - b. Independence is Essential; Advocacy Sources are not Useful
  - c. De-politicized Science Communications are Valued and Should be Pursued
- 3. There is an Interest in More "Accessible, Usable Science"
  - a. This Includes "Granular" Science (i.e. focused on localized impacts) Useful to Target Constituencies
  - b. Science Should Support Work on Mitigation and Adaptation
  - c. Businesses are Seeking More Actionable Data

#### 2.1 Causal Science is Sufficient and Accepted by Decision Makers

a. Decision Makers Need and Use Climate Science

For virtually all decision makers that we interviewed in business and government, the causal climate science—with regard to the fact that it's happening and that it's at least significantly human-induced—is accepted. This is true even for those who were skeptical of recent policy initiatives such as U.S. energy legislation or global policy solutions (such as the climate treaty) or aspects of those proposals.

This finding is likely to be significant because we intentionally selected interviewees in order to gather a wide range of views and not just those who supported the recent legislative or policy efforts. We included business leaders with mining and energy interests, conservatives who are conservation oriented but skeptical of policy solutions offered by the mainstream environmental community, and former elected officials concerned about climate issues but frustrated by policy initiatives to date.

The consistency of this finding across all decision makers surprised us because given the strategic premise of many climate science communications initiatives—that many decision makers are targets and need more science information—we expected to find doubt and uncertainty among some decision makers. Instead, it was clear that the view that the science is accepted extends to other similarly-placed decision makers and that our interviewees were not simply a limited set of individuals with exceptional views.

However, these decision makers do encounter skeptics in their work. Quite a few in the business sector, as well as those who are more conservative leaning, described the challenge of their relationships with those who are unsure of or disagree with the science on climate. This allowed for rich discussions of the type of climate science information that would be most useful with constituencies where the question of climate science is unsettled (see Section 2.2 below).

It was also clear from these interviews that acceptance of the science is not sufficient itself to lead to immediate action on policy. For some, the urgency of the situation, with regard to response, is not as well accepted as is the fact that climate change is happening and is caused, at least in part, by

humans. While we do not have enough information to arrive at a finding on this, it may be the case that for some this is where the uncertainty over modeling comes into play—we know it is happening and will be significant but how do we make policy when the models are uncertain. A response could be to focus policy initially on areas of certainty, i.e., we can agree that we know this so let's start with policy here. For others, the urgency is accepted, but they do not see a pathway forward given the current politics and the climate issue dynamics among key constituencies.

*b.* <u>Criticism of Science Didn't Alter Decision Maker Views, but Did Unsettle Key Constituencies</u> For virtually all decision makers, "attacks" on climate science, including the Climatic Research Unit email controversy, had little to no effect on their views on the scientific consensus that climate change is occurring. Most saw the email controversy for "what it was;" one conservative-leaning interviewee referred to it as "an effort to at least make sure that non-scientists were confused."

However, while "attacks" on climate science had little or no impact on the views of decision makers themselves, they did report that the controversy had an impact on the constituencies within which they operate, many of which may be important with regard to future climate policy (such as farmers, conservative conservationists, and some in the business sector, particularly those sectors where climate change policy is perceived to threaten their industry or business model). Clearly, the email controversy bolstered those who already doubted the science and opposed policy reforms and fostered doubt among many "fence sitters."

Interestingly, those interviewed did not write off the potential to use science to reach constituencies impacted by "attacks" on climate science. They shared a number of ideas but were cautious. A rush to push a particular scientific analysis or aggressively promote certain science sources could be counterproductive, causing views to harden further and closing opportunities. For example, it could be a tactical mistake for environmental groups to organize in farm country on the basis of real-life impacts on farmers because the message and messenger may not be a fit and it could be perceived as an attempt to drive a particular outcome rather than provide unbiased information. It may be far better to take the time required to have farmers talk with seed companies about their planning in response to climate issues, insurance companies about how they account for climate change in developing their business plans, and scientists from the local agricultural extension who farmers may already know and trust.

*c. Climate Science is One of Many Policy Drivers, and is Unlikely to Drive Policy by Itself* A number of decision makers described how "attacks" on climate science were one of a number of factors that significantly altered the policy landscape around the energy bill and global climate policy. Additional factors included a significant recession and issues such as health care reform and immigration. Some pointed to the nature of the proposed legislation itself and the complex politics and compromises around it. Some saw the email controversy as part of a larger political narrative built around institutional failure, government influence in the economy, and the potential for negative economic repercussions of government action. In this retelling, the controversy was not significant as a single event but it reinforced and fit into this larger narrative that was already gaining traction. One conservative-leaning conservationist described this mix of factors as a "perfect storm." The implication being that the email controversy absent these other factors would not have been as significant.

#### 2.2 Credible "Go-To" Climate Science Sources Exist

a. <u>Decision Makers Have a Sophisticated Sense of Science Sources and Draw on Sources Beyond</u> <u>the IPCC</u> Those in government and business look for sources that are credible and dependable, and for the decision makers we interviewed, those sources already existed before the climate email controversy and are generally still used and useful.

Current science information (with regard to basic causality) is sufficient for decision makers, and there appear to be no glaring holes in the system or fabric of science information.

Most have developed their own effective short-cuts to information based on three factors:

- 1. trusted relationships based on experience with sources,
- 2. needs of the audience they are interacting with, and
- 3. reputation and nature of the source.

The two key aspects of the information sought by decisions makers are <u>independence of the source</u> and effective presentation—i.e., is it usable for their purposes? While effective presentation largely depends on the way the information is being used and who the audience is and we did hear some examples (such as the Pew Center on Global Climate Change's *Climate Change 101* series as an effective communication of the science in layman's terms), we did not have the capacity or mandate to gather and analyze examples.<sup>3</sup>

Generally speaking, science information used on the Hill or in policy circles is less detailed and specific than the information used for decision making inside companies. While the data still needs to be credible, the metrics are different.

On the Hill, many get information on climate science from government agencies and third parties that report on the science (e.g., Pew Center on Global Climate Change, WRI, *Science, Nature, The New York Times*). They typically do not have time to read original research. When they do need to use original sources they find current information adequate, know where to get it, and have sufficient sources.

In the business sector, decision makers look for two types of science information: 1) when working in the policy arena, they tend to utilize credible, independent summaries just like those who work on the Hill, however, 2) when making internal business decisions, they are looking for the data or analysis necessary to make what is typically a dollars-and-cents decision; for this, they utilize government reports and/or their own internal research.

There was a real sense from these interviews that a considerable depth of scientific information exists. In fact, several interviewees identified information overload as a challenge, particularly in terms of trying to keep up with the details of climate science or its impacts. There was no sense that more sources or communication at a higher volume was needed with regard to causal climate science. However, combined with this overall sense of ample information, there also exists the somewhat contradictory request, particularly for those we talked with in Congress, for a continued stream of introductory information that supports and reinforces the reality of climate change and the fact that man's actions are causing it. The suggested audience for this continued flow tends to be new staff and new members—either new to Congress or to the issue.

The IPCC was accepted by almost all as a credible information source and many decision makers use their science when appropriate. However, while trusting the IPCC themselves, quite a few respondents had trouble with the fact that the IPCC has become controversial with certain

<sup>&</sup>lt;sup>3</sup> The 101 series is available online at http://www.pewclimate.org/global-warming-basics/climate\_change\_101.

constituencies, thereby making it more difficult to use the IPCC as a reference point in some situations. This is certainly where "attacks" on climate science had an impact—in that it cast doubt on some prominent sources, particularly international sources, even if there was no direct link. Others expressed it this way: they have concerns that the politicization (real or perceived) of the IPCC process creates problems, even if the science itself is respected. Therefore, they now have to be careful how they use IPCC sources and who they use them with.

Some decision makers rely on original science, or at least summaries of this research, which they typically source from government and academia. With regard to U.S. government agencies, most of those doing climate analysis (such as NAS, NOAA, USGS, and NASA) are trusted. The exception, for quite a few, is EPA and sometimes CEQ. While it is recognized that EPA produces useful information, quite a few respondents see their analyses as open to politicization and also clouded by their role as a regulator. This characterization of EPA is true irrespective of the political orientation of a particular administration.

When considering sources that interpret or translate original science into formats that are more digestible or usable to a wider audience, the business sector is less inclined to use these sources at least for business decision making. When Hill staff do use translators, they tend to find one or two and then stick with those particular sources. With regard to the perception or posture of the sources they use, while they will only use independent sources with others, some on the Hill will use more "partisan" sources (e.g., Climate Progress, Union of Concerned Scientists, Natural Resources Defense Council) for their own edification or because they provide useful guidance on politics or positioning.

With those we interviewed, there was little awareness of Climate Central and other new organizations or initiatives dedicated to the promotion or translation of climate science information to decision makers. It is entirely possible that this was a result of the newness of these initiatives or other factors.

What may be more important is that we heard little demand for or interest in information from these types of intermediary initiatives. This could be due to an underlying interest in independent sources and long-term dependability—decision makers want to know who they are getting information from, their agenda, and who is behind them. If their current, trusted sources are adequate, why do they need more? Businesses appear particularly unlikely to use translators for internal purposes. They take the raw science and then use whatever system (e.g., internal scientists; consultants) they already have in place to get it in a form that is usable for their needs. For government, the source must be independent. From this one could conclude that any new source or initiative would need to a) be completely transparent as to support and orientation, b) be legitimized for these decision makers (perhaps by some of them), and c) fill an unmet need.

We did hear from some respondents that they use blogs and similar sources (e.g., Climate Progress, Climate Central, The Daily Climate), but these were viewed more as advocacy resources rather than science sources and appear to be used primarily with specific audiences already familiar with the given resource or as "barometers of where positions are and where they may go."

When considering the decision makers we interviewed as well as the constituencies they spoke about, it was clear that the credibility of any source varies depending on the audience receiving the information. For example, decision makers in some sectors and on some issues (e.g., agriculture) appear to prefer local/regional academic sources and validators, either for their own edification or to use when communicating with particular audiences. Others noted that they use particular agencies or organizations for information because of existing relationships with these groups, thereby increasing their familiarity with and trust of the information they release. Examples included decision makers who looked to alma maters or other universities/organizations that they had professional relationships with or business decision makers who had relationships with particular government agencies conducting relevant climate science.

Figure 3 displays data on the science-focused sources described most frequently by decision makers as those they use or consider to be credible. Depending on the interview, we typically prompted the interviewees with a set of specific sources; however some interviews had to be shortened or it became clear that a certain category of sources was either not credible and therefore no prompts were given or not all were given.<sup>4</sup> Therefore, this graphic presents a general impression of credible sources but does not present a representative survey. Data on the most-cited journals and institutions is provided in Tables 1 and 2 below. Additional research would be required to draw conclusions about the credibility of specific sources; however, this does demonstrate the high credibility of government and university sources, as shared by interviewees.



Figure 3: Decision Makers Views on Credibility of Sources

### Table 1: Most-Cited Journals in Climate Change Research, ranked by citations to papers published and cited between 1999 and 2009<sup>5</sup>

Institution	Citations
Nature	22,952

<sup>&</sup>lt;sup>4</sup> The list of science-focused sources we used to prompt interviewees included the following: USGS; NOAA; NASA; other U.S. agencies; National Academy of Science; local university vs. brand name such as MIT or Yale; the IPPC; Science/Nature type magazines; American Meteorological Society (or meteorologists in general).

<sup>&</sup>lt;sup>5</sup> King, C. 2009. "Warming Planet, Hot Research." *Science Watch Newsletter*, Thomson Reuters. Link.

Science	21,791
Global Change Biology	12,013
Journal of Climate	11,778
Geophysical Research Letters	10,500
J. Geophysical Research Atmospheres	9,826
Climatic Change	8,423
PNAS	7,484
Climate Dynamics	5,761
Quaternary Science Reviews	5,470

Table 2: Most-Cited Institutions, ranked by citations to papers published and cited betweer
1999 and 2009 <sup>6</sup>

Institution	Citations
Natl. Ctr. for Atmospheric Res.	11,341
NASA	10,731
Natl. Oceanic & Atmospheric Admin.	10,609
Columbia University	10,600
Max Planck Society	9,925
Met Office (U.K.)	9,667
University of Colorado	9,078
University of Oxford	8,622
University of East Anglia	8,386
University of Washington	8,153
University of Alaska	8,098
U.S. Geological Survey	7,976
Univ. Calif., Berkeley	7,811
Pennsylvania State University	6,981
Univ. Calif., San Diego	6,951
Stanford University	6,907
CSIRO (Australia)	6,665
Univ. Calif., Santa Barbara	6,417
University of Wisconsin	6,271
Colorado State University	5,946
Chinese Academy of Sciences	5,612
Princeton University	5,519
Smithsonian Institution	5,512
Oregon State University	5,346
Duke University	5,345

#### b. Independence is Essential; Advocacy Sources are not Useful

Decision makers made it clear that the source and type of messenger delivering climate science information is essential to how the information is received. With very few exceptions, advocacy groups (even if they are respected with regard to their advocacy or policy work) are simply not seen as useful science sources and can at times be counterproductive with certain audiences. Although many decision makers went out of their way to share information about environmental groups and leaders they valued and had strong relationship with, they made a distinction between their value as policy colleagues and their usefulness as science messengers or sources of science. For the most part, they simply discount or ignore science or technical information from groups with

<sup>&</sup>lt;sup>6</sup> King, C. 2009. "Warming Planet, Hot Research." Science Watch Newsletter, Thomson Reuters. Link.

a policy agenda on climate issues. They will put it in a box marked "partial." This is true both of communication directly from well-known advocacy groups and any indirect efforts linked to them or initiated by them. Most interviewees demonstrated a high level of awareness and sophistication with regard to their ability to assess relationships and linkages. Views like this were not limited to those in a particular industry or with a particular policy or political orientation—we heard this across the board.

The question of messenger becomes particularly important for decision makers when they are working with some of their constituents. A number of respondents assertively cautioned against using environmental messengers to explain or promote science with constituencies for whom the science debate is not yet settled. This includes some of the emerging "persuadable" constituencies being identified by climate science communications initiatives and experts in our survey and interviews, such as agriculture or business interests.

#### c. <u>De-politicized Science Communications is Valued and Should be Pursued</u>

Further, several decision makers indicated (without being prompted) that some of the best messengers were likely to be unexpected messengers, e.g., those messengers who take positions that do not obviously match their interests, and businesses working their way through challenges presented by climate impacts. For many constituencies, if businesses are responding to impacts and making necessary business decisions, then climate change must be real. We heard references to seed companies, insurance companies, companies investing in technologies and opportunities related to climate, mining companies who support the need for climate reforms, etc.

Many expressed a need for an authoritative voice, process, or referee to point to or at least clarify where there is consensus or agreement on causal climate science. This was not a call for new information or platform (although a call for new, actionable, granular science was expressed, as discussed in Section 2.3) and it does not mean that the sources described elsewhere in the report are not trusted. We heard an expression of interest in trying to settle or clarify what we know and what we do not yet know and to test how deep this agreement extends into key decision-making groups—in particular to make established science more likely to be usable in the policy arena. This interest is not dissimilar from one of the motivations for this research and report on climate science communications—many commented on the fact that they appreciated being asked their views on climate science, wanted to know what we found, and were interested in next steps.

These respondents are not suggesting that they need a referee with regard to their own views on science, but they believe that this would benefit them when they interact with others, whether it's with constituents, the media, or a board of directors. Some described this more as a process than an institution. An essential ingredient for many was that such an effort would need to be organized in a truly even-handed, non-partisan, and open manner and not be controlled by any one set of interests. While environmental advocacy groups would be part of such a process, they would not control it and the same would be true of business or other participating interests such as foundations.

Some noted an additional benefit: this could help differentiate those who are doubters for purely political reasons from those who are open minded and want to engage on policy but have serious questions that they believe need answers. Specific examples that were mentioned by interviewees included the fair-minded role played by Resources for the Future on policy debates like this, and the joint fact finding process that RESOLVE and others have used to unpack and reach agreement on hotly disputed science. Some saw this type of an approach as a proactive step that could be taken as a form of antidote to future "attacks" on climate science.

It is important to note that what is being suggested is not simply a meeting of the minds of scientists; it is a process that works with and draws on science to establish a political consensus across leadership in stakeholder groups or constituencies.

While this finding is about communications, it is communications of a different sort. Rather than external or media communications, it would focus first and foremost on interest group communication (both within and across groups) in order to identify areas of agreement and interest group communication.

A number of interviewees expressed frustration that those who express what they see as legitimate skepticism of some aspects of climate science and its implications are typically lumped together with deniers. They see themselves as quite different from the deniers—they may agree with aspects core climate science but have serious questions that they think need to be discussed and considered. As a result, expert voices who could help neutralize politically motivated deniers feel stigmatized as "uninformed, closed minded, or ideological."

Politicization of science is a sensitive issue irrespective of political orientation or affiliation. Many climate protection advocates are frustrated by what they perceive as the politicization of climate science initiated by those with an anti-science agenda or those with a vested economic interest in the status quo. On the other hand, some business and policy interviewees expressed that certain mitigation advocates were seen as having the ulterior motive of targeting particular industries such as fossil fuels rather than responding to climate change with a science-based approach. Similarly, other decision makers saw politics in the perceived unwillingness of many in the environmental community, at least in the past, to advance or support policy development on climate adaptation because they thought it undercut the case from mitigation policies. This was perceived by a number of well-placed respondents as a significant strategic mistake that appeared to be counter to the science itself. For them, it created a dynamic where national and global policy initiatives, even before the climate data email controversy occurred, appeared highly politicized and driven by a particular policy outcome rather than based upon For some, this undercut the credibility of some in the environmental community.

It also may be worth noting that due to the high degree of politicization of the issues, particularly around science, we found some evidence that businesses appear split on their role as communicators. Some in the business community now appear less willing to be vocal on these issues, at least with some constituencies, while others continue to be willing to do this within the business sector and in some communities. This may be an area worth additional inquiry, particularly linked to other parts of this analysis such as the need for an authoritative source/voice (given the perceived value of business communicators on that issue).

#### 2.3 There is an Interest in More "Accessible, Usable Science"<sup>7</sup>

#### a. <u>This Includes "Granular" Science (i.e. focused on localized impacts) Useful to Target</u> <u>Constituencies</u>

A large number of decision makers expressed a desire for more localized, granular, and usable science on impacts and response to impacts. This, more than anything else, was the science-information gap or need expressed consistently across our interviews. Related to this, we heard

<sup>&</sup>lt;sup>7</sup> Granular science refers to science that is relevant for the decision maker's local region or area of interest.

some express frustration that environmental advocates seemed unwilling to engage on the issue of adaptation.

A strong case was made by many, particularly those engaging directly with key uncertain or

skeptical target constituencies (e.g., farming, fisheries, businesses), regarding the need to bolster capacity to use science and other forms of analysis (e.g., economics and other social science) to understand more localized impacts and engage with these constituencies in the context of real-life, real-time issues and impacts (e.g., growing seasons, fire seasons, drought or flooding, weather events). Many respondents see local and regional constituencies of all political orientations increasingly focusing on



understanding and addressing real world impacts, such as cities taking action to adapt to adverse effects or water utilities accounting for climate change in long term planning.<sup>8,9</sup>

#### b. Science Should Support Work on Mitigation and Adaptation

We heard from conservation conservatives and those working in business sectors with more skeptical constituencies that this type of impact-based analysis and response design could help open the door for acceptance of climate impacts in some skeptical circles, which could in turn lead to support for mitigation policies—as well as adaptation. The premise is that focusing on the impacts that communities are actually experiencing moves the debate away from causal science, which now tends to take place with political or ideological undertones, to science that describes the realities of the impact and the use of science to support response design. Moving the discussion to what's happening in people's own communities and how to respond draws in constituencies. Once constituencies are focusing on localized impact and response, they are de facto accepting that climate change is occurring, regardless of its causes. Many see this as a way to depoliticize the climate science discussion. As we heard, "when it gets personal, you start being open to science."

One cautionary note—concern was expressed by some that if efforts to promote or use impacts or adaptation science were organized, supported, or framed primarily as a means to validate underlying causal climate science or in support of a particular policy agenda rather than as a means to respond first and foremost to real impacts (whatever the cause of the impacts), then this could undermine efforts to reach new constituencies because it would be seen as linked to a political or advocacy initiative. This speaks to the highly politicized nature of this issue and a tendency to look for a motive or agenda at every turn. And it suggests the importance of a real focus on science and local impacts as an important information-set to address these localized issues, first and foremost.

It is therefore wise to proceed with care and caution with regard to the call for more granular impacts science. Otherwise, it too is likely to become politicized.

#### c. <u>Businesses are Seeking More Actionable Data</u>

In addition to its usefulness in engaging with certain constituencies, many business leaders wanted more granular impacts information for their own purposes. Businesses are seeking actionable data so they can set goals and targets whether for their own emissions or efficiency programs or for business planning purposes (e.g., where are impacts most likely to occur so that I can plan accordingly; where might data or analysis represent a potential business opportunity). The more

<sup>&</sup>lt;sup>8</sup> Koch, W. (2011) "U.S. cities prepare to adapt to climate change." USA Today. August 26. Link.

<sup>9</sup> Song, L. (2011) "Utilities and climate scientists team up to prepare for bleak water future." Inside Climate News. August 19. Link.

this information is available, the better able business leaders are to convince their boards to act and to share this information with others in their sectors or their supply chains.

#### 3 Landscape Survey Findings

We used the 28 survey responses from climate science communication initiatives to help us characterize the initiatives by type, capacity, strategic focus, and other characteristics. We supplemented the survey with 30 interviews of leaders in the field (See Appendix B for the list of landscape interviewees). This helped us test and supplement our findings. The findings present a snapshot of the current field, with views on needs, challenges, and opportunities. We found the field dominated by initiatives and organizations that aggregate and communicate climate science and opinion, as shown in Figure 4. The strategic information that we gathered helped us test these initiatives against the expressed needs of decision makers. This analysis identified both gaps and opportunities—see Section 4.

The main findings from the landscape survey, which are described in detail below, include:

- 1. There are Benefits to Better Aligning Communications Capacity and Decision-Maker Needs
  - a. The Field Expanded Quickly, with Many New Initiatives
  - b. Most Initiatives are Based in or Linked to the Environmental Community
  - c. Current Assumptions and Targeting are Not Fully Aligned with Decision-Maker Needs/Views
- 2. Strategic Coordination Can Help Respond to Needs, Close Gaps, and Address Inefficiencies
  - a. The Majority of Initiatives are Small, with Limited Capacity
  - b. Despite the Proliferation of Initiatives, Gaps Exist
  - c. The Initiatives are Fractured with Limited Coordination

A full list of initiatives included in this landscape is presented in Appendix A. Figure 4 displays our understanding of the relative frequency of primary roles of all the initiatives presented in Appendix A, based on information provided by those running these initiatives and research into how the initiatives publicize their mission and activities online.



**Figure 4: Primary Roles of Climate Science Communications Initiatives** 

We also created a series of labels (i.e., taxonomy) to describe and categorize climate science communications initiatives using information provided by those running these initiatives and research into how the initiatives publicize their mission and activities online. The "landscape" presented in Figure 5 below displays our understanding of how climate science communications initiatives relate to each other, how they are viewed by decision makers, how much advocacy they are doing, and how much they are focused on information versus outcomes.

The color-coding on this graphic shows the relative independence versus advocacy orientation of the initiatives that fall under each category. The size of each box shows the relative number of each initiative we considered under each category. We realize that this analysis has limitations—it is only as good as the information that we were provided or could locate and our capacity to use this information to draw out distinctions. Others may be able to improve this taxonomy and we encourage them to do so. We suggest that this is used as a general sketch and a starting point rather than as a definitive analysis based upon detailed probing of specific initiatives.



- communicate that science
- 1b. Climate Science: Academia Universities and other academic institutions that conduct climate science and communicate that science<sup>10</sup>
- 1c. Climate Science Reporting Journals that review and publish climate science<sup>11</sup>

<sup>&</sup>lt;sup>10</sup> The academic-focused initiatives included on our list do not represent a comprehensive list of all university programs focused on climate science. Our list highlights several university initiatives focused on climate change communications.

- 2. Climate Social Science Research efforts focused on studying how people understand climate change and how to best communicate about climate change
- 3. Education-Focused Initiatives Initiatives focused on increasing the presence of climate science in the education system—these sometimes use education as a means to incite action, but they seemed a better fit for this category rather than the advocacy categories
- 4. Climate Policy Analysts NGOs focused on using science, including climate science, to produce information and inform policy making
- 5. **New Climate Comms Initiatives** Initiatives, including blogs and other public outreach efforts, focused solely on communicating climate science and other climate-related information to a wide audience
- 6a. Climate Advocates NGOs focused solely on advocating for change to address climate change, which use climate science as part of their advocacy
- 6b. Envi Advocates (including climate) Environmental advocacy NGOs that advocate on climate issues and through this advocacy communicate on climate science as part of a larger strategy; we recognize that this particular group is probably much larger but our survey only included a subgroup of these since this was not our primary focus
- 7. **Defenders** Initiatives focused on defending climate science through non-traditional communications efforts
- 8. **Comms Shops and Consultants** Communication firms and consultants focused on providing communications services to specific types of initiatives or a range of clients

Figure 5: Climate Science Communications Initiatives Grouped by Taxonomy

### 3.1 There are Benefits to Better Aligning Communications Capacity and Decision-Maker Needs

a. The Field Expanded Quickly, with Many New Initiatives

Most platforms or initiatives report their target audiences in very broad, general terms (e.g., federal government, the media, the public). When we tried to probe for additional detail, we typically did not find further refinement—at least at the time of the survey and interviews. Figure 6 below displays the frequency of the primary targets reported in the survey. This is an area that may

<sup>11</sup> The journals included in our list do not represent a comprehensive list of all publications that review and publish climate science. Our list highlights several of the most-cited journals on climate science.

benefit from further research. We did hear that for many thinking was evolving with regard to targets.



**Figure 6: Initiative Targets** 

Additionally, the platforms tend to share similar primary communications strategies, namely conducting outreach through traditional and social media and utilizing scientists as messengers. Smaller clusters of activity are focused on producing and disseminating original climate research, communicating climate science to support policy development, and integrating climate science into academic curricula. We also identified limited capacity/resources in the areas of "opposition" research and rapid response and service providers offering communications services and infrastructure to the climate science community—both of which are outside the scope of this research project.

With regard to communicating climate science, many expressed the view that this is complex and that there is no silver bullet, because unlike other issues, climate touches virtually every aspect of the economy and society. They called for bolstering the capacity to effectively translate science for what amounts to a myriad of constituencies, interests, issues and impacts.

Many communications leaders we interviewed spoke to the need for a bigger tent of messengers, both inside and outside the scientific community. It was thought that a broader pool of messengers would help affirm the consensus and increase the ability to reach various constituencies. When asked to identify constituencies who should be more engaged in climate science, respondents provided a long list of specific audiences, ranging from business and local leaders to TV meteorologists to municipalities and industries involved in preparedness. This may be evidence that thinking is moving in the direction of more refined targeting (and some stated explicitly that strategic rethinking is underway). We have a sense that we are viewing this field during a time of self-reflection and transition. For example, some leaders in the field are exploring new strategies that seek to communicate more around local impacts and examples of climate preparedness, take advantage of "teachable moments" like extreme weather, and target more specific constituencies.

#### b. Most Initiatives are Based in or Linked to the Environmental Community

The majority of initiatives that are funded to package, distribute, and promote climate science, at least those we analyzed, have an environmental advocacy base or a "green" orientation or posture, as opposed to a more independent government or academic posture, as shown in Figure 5 above. There are certainly linkages (e.g., staff history, funding, formal or informal connections with political constituencies or policy advocates) across and between all types of initiatives, with many academic institutions working closely with environment initiatives, but at their core most of the communications initiatives have clear environmental-community roots.

*c.* <u>Current Assumptions and Targeting are Not Fully Aligned with Decision-Maker Needs/Views</u> There is a shift in focus from a global science and policy focus to communicating sector-specific, geographically-localized data and projections on impacts and incremental changes and spotlighting new practices on the ground aimed at "climate preparedness." This shift is viewed by many as a potential opportunity to test emerging strategies and tactics including:

- Reach and engage potentially influential constituencies with new messengers, such as private sector business leaders or local officials showing what they are doing to prepare for climate change. Recent news stories in the *New York Times* and *USA Today* demonstrate this approach may have legs.<sup>12</sup>
- Circumvent the current frame (whether or not the climate is changing, what causes it, and the politics of federal solutions) and go through another door where the frame focuses instead on real, localized impacts and steps being taken in the interest of increased resilience and preparedness—in the process treating causal science as a given.
- Take greater advantage of teachable moments. Focus data, resources, and spokespeople on real time impacts and their connections to climate science (e.g., storms, drought, flooding, fires, crop collapse)
- Design research and communication tools that localize information and data and package it for local TV, local scientists, agricultural extension agents, and civic leaders to use and explain it to peers.
- Develop graphical tools for presentation of locally tuned information in a compelling way.
- Utilize innovative partnerships with major distribution channels in media and Hollywood, such as the National Science Foundation partnership with NBC on the "Science of the Olympic Winter Games."
- Experiment with various communications strategies, messengers, and tactics and find ways to evaluate impact and make adjustments to strategy based on results. For example, if TV meteorologists were engaged as messengers on climate science connections to extreme weather events, did resulting coverage reflect that frame in those teachable moments and what was the impact on viewers?

"This is the world's largest and most important communications problem; in the face of that we need a lot of experimentation, learning, and humility."

• Increase and use social science research on how best to communicate science, scientific uncertainty, and complexity in compelling ways (such as the Yale Project on Climate Change Communication and the George Mason Center for Climate Change Communication).

<sup>&</sup>lt;sup>12</sup> Kaufman, L. 2011. "Changes in the Air: A City Prepares for a Warm Long-Term Forecast." *New York Times*. May 22. <u>Link</u>. and Koch, W. 2011. "U.S. cities prepare to adapt to climate change." *USA Today*. August 16. <u>Link</u>.

Consider research to help inform the choice of messengers with various audiences and avenues to cultivate those messengers.

Note: While we heard a call for defending core climate science, we did not test the potential effect of this type of strategy on decision makers. Such an approach will often utilize tactics outside the subject of research.

### 3.2 Strategic Coordination Can Help Respond to Needs, Close Gaps, and Address Inefficiencies

#### a. The Majority of Initiatives are Small, with Limited Capacity

Despite the growing number of initiatives focused on climate science, the majority of them are small and limited in capacity, with less than five full-time-equivalent (FTE) staff. Some groups have a singular focus on communicating climate science; many have multiple issue missions and do not focus exclusively or even primarily in this area. We also heard from our interviews with leading communications strategists that most climate science communications platforms rely on a small stable of science messengers and are limited in capacity—in other words the scientists linked to these efforts may be feeling overtaxed.

Figure 7 below displays the capacity (based on FTE staff) and intensity of focus (based on percentage of budget/mission focused on climate science communications) of the initiatives that responded to our survey. The numbers (light green bar) pertain to the specific number of FTE staff dedicated to climate science communications. The percentages, dark green and blue bar, correspond to mission and budget respectively.



#### Figure 7: Capacity and Intensity of Focus of Climate Science Initiatives<sup>13</sup>

#### b. Despite the Proliferation of Initiatives, Gaps Exist

Leaders in the scientific and environmental communities believe they have succeeded in putting climate change on the map in the last two decades. However, they recognize and are frustrated by

<sup>&</sup>lt;sup>13</sup> Many initiatives that were identified through initial research did not respond to requests for information. Therefore, the data in this chart does not include information on these initiatives. It only includes information from respondents.

the significant disconnect between the scientific consensus on causal science (97-98%) and public understanding of and agreement on this consensus (bare majorities).

Many in this community assert that a major strategic misstep occurred when it was assumed that the science was "in," done, and settled. This created vulnerability when opponents made undermining the science central to their strategy. In retrospect, the response is seen as inadequate. Today, the continued response to the "attacks" on climate science and defense and promotion of causal science defines the field. This remains central to the mission and strategy of most initiatives.

Further, the widely shared mission (either explicit or implicit) of most initiatives is to proactively communicate the consensus science on climate and to get their target audiences to understand the climate is changing, that human activity is a cause, and that there are serious impacts and consequences for people and the environment as a result. It is widely accepted by those active on climate science communications that without sound, compelling science that is effectively communicated, there is no foundation for progress or solutions on climate change. Therefore they focus on improving access to and communication of science.

Some in the advocacy community expressed frustration at what they described as a concerted effort in recent years in the larger climate advocacy community to talk not about the science and the threats and impacts of climate change, but to focus instead on green energy, economic arguments, and solutions. Many practitioners are convinced of the need to talk simply and directly about climate science and to increase communication on climate impacts, dire warnings, and scary consequences.

#### c. <u>The Initiatives are Fractured with Limited Coordination</u>

In addition to the limited capacity, respondents indicated that current initiatives are not always or consistently well-coordinated within the broader environmental community—despite the connections noted above. While many platforms in this space are informally connected or aware of each other, many noted that strategic coordination and connections are lacking, leading to redundancy, inefficiencies, and sometimes even working at cross purposes. In other words, there is informal communication, but there may be a gap with regard to focused discussions where strategies are discussed, compared, and even coordinated. For example, there are a number of separate initiatives that all utilize the same relatively small pool of scientists. Respondents contrasted this landscape with the discipline, focus, and cohesion of climate opponents.

Through the landscape survey, we attempted to gather information on linkages and networks, both formal and informal, among climate science communications initiatives. The information we gathered includes a rough picture of some initiatives and individuals that are working together or on similar issues, but this information is not thorough enough to make an informative our useful network map.

Among those we talked with, there is a sense that this gap in strategic coordination could be a significant weakness given the challenges of the media environment and the highly coordinated effort on the part of those "attacking" causal climate science.

#### 4 Potential Implications and Opportunities

In this section we draw out some initial implications from a comparison of the focus and capacity of current climate science communications initiative and the expressed needs of decision makers. We look at gaps, opportunities, and areas that may be ripe for exploration. We tried to understand key

strategic elements of the communications platforms that we surveyed and compared those to our understanding of the strategic dimension of the information we gathered from decision makers.

We are aware that this analysis has limitations. For example, we did not analyze detailed strategic plans for each initiative, and we gathered useful information from decision makers, but we did have limits with regard to number and time. Therefore, a number of findings are likely to need further testing with those leading climate science communications initiatives and others. We also found a number of opportunities that extended beyond climate science communications, and we listed those here.

We encourage stakeholders—from funders, to those leading communication initiatives, to decision makers and leaders of key constituencies—to consider these findings: to challenge them, add to them, and consider both implications and opportunities.

We identified the following potential implications and opportunities, which are described further below:

- 1. For Decision Makers, There is an Interest in Information that Moves beyond Defense of Causal Science to a Focus on More Granular Science (on Mitigation and Adaptation)
- 2. Move Away from Advocacy Science (for Decision Makers), Toward Collaborative Science
- 3. Diversify: Encourage Others to Communicate
- 4. Focus on the Business of Climate Mitigation and Adaptation
- 5. Coordinate Strategically Across Initiatives to Bolster Effectiveness and Improve Efficiency

#### 4.1 For Decision Makers, There is an Interest in Information that Moves beyond Defense of Causal Science to a Focus on More Granular Science (on Mitigation and Adaptation)

Fundamental climate science appears to be accepted in the minds of decision makers, at least those with an open mind to science, yet many initiatives have developed strategies and capacity to influence decision makers as if this question remains largely unsettled. While we identified a number of science needs and opportunities, there is no call for additive climate science communications capacity related to causal science. The sources that exist, which are primarily government and agency sources along with peer-reviewed science, are sufficient. There is recognition of the benefit of and a call for keeping information flowing. For example many pointed to the needs of new members and new staff in Congress. For funders, this could point to the benefits of strategic consolidation and a focus on bolstering current, credible sources of information.

As described in Section 2.3, the primary science information gap was a call for more granular, localized climate science information to inform response and adaptation, which was consistent across our interview spectrum. Despite this expressed need, most of the current climate science communications initiatives are built around the perceived need to promote causal science, rather than more granular science on impacts and response. This may be understandable because this type of information is not yet readily available—this is in many ways more of a science need or gap than a communications issue.

This is good news in that it presents an opportunity to focus new resources on bolstering capacity in other areas of need. What decision makers appear to need is support in opening up the issue with key constituencies, which is likely to require different strategies and methods (as described further in the sections below).

### 4.2 Move Away from Advocacy Science (for Decision Makers), Toward Collaborative Science

With an emphasis on the need to depoliticize the core science and establish a basis for advancing policy, there was a call for a process that could establish what science marks as known, what is less well understood, and areas where little is known in order to open up space for policy advances. While many climate science communications initiatives are trying to bolster the capacity and standing of scientists to make their case, we are not aware of an initiative that seeks to serve this function (nor did decision makers mention any existing initiatives)—nor is it really a traditional external communications function.

There are, however, precedents and examples of how this need has been met on other science challenges. We are aware of three primary methods for fulfilling this need: 1) the center of excellence, 2) the blue ribbon panel, and 3) the process of collaborative joint fact finding or crossconstituency consensus building on core science. There are pros and cons to each of these. For example, centers of excellence can be resource intensive and may be susceptible to politicization, blue ribbon panels can also be politicized, and joint fact findings require a difficult-to-achieve linkage between policy makers and constituency leaders and scientists. The benefit of a process, like collaborative joint fact finding or consensus-building, is that it requires participation and endorsement from key constituencies before proceeding, and the right endorsements and participants have the potential to protect it from political attacks. It also focuses on the issues rather than institution building. In other words, in important ways joint fact finding may be a fit given the circumstances and the stated needs and interests of decision makers we talked with. We did not hear a call for a group of scientists to go off and try to settle this. We heard decision makers, who believe the science, wanting to test themselves and others to determine if the general sense of agreement across decision-maker groups can be captured, with support from scientists, to open up policy space.

If such an initiative gets underway those engaging in communications generally and advocacy communications in particular should take such an effort into account in their planning—certain communications strategies could either support or undercut an effort like this.

Central to success would be to design an approach that works for key constituencies including those in the business community, conservative conservation leaders, and those in the agriculture community. A critical feature to success of a process like joint fact finding is a willingness to give up sole ownership of the results; this is not "bought" science and the fact that there is risk for all is part of what makes the process credible and useful. With regard to sponsors, conservation oriented foundations may have a role to play. However for this to work it will likely be necessary for these foundations to partner with other leaders with different reputations and interests. The idea of unlikely allies or institutions willing to challenge their thinking or assumptions is likely to be important.

#### 4.3 Diversify: Encourage Others to Communicate

While many of the current climate science communications initiatives are part of, linked to, associated with, or funded by environmental organizations or donors, decision makers are unlikely to use science information from policy or advocacy organizations or initiatives linked to them, as discussed further in Section 2.2. We heard that it will continue to be important to ensure that a steady flow of communications on core climate science continues. Therefore it's likely to be

important to ensure the capacity of truly independent sources to continue to produce this information in a format that meets the needs of decision makers.

At the same time, climate science initiatives may want to review their targeting assumptions and capacity to take this finding into account. This is likely to be particularly important with target constituencies where "attacks" on climate science had an impact. Some may refine their targeting to where they can have impact; others may want to rethink their strategies with regard to which constituencies they can reach effectively and where other messengers may be more useful.

As more information comes on line, it will be important for communications experts to consider the best messengers. We heard from key decision makers that environmental advocates are unlikely to be effective messengers. While it may be enticing for environmental advocacy groups to try to fill this void directly, this is likely to be counterproductive. There are some organizations and initiatives already taking this into account in their planning and program design; it could be useful to start by understanding their findings and learning. This may ultimately require outside-the-box thinking with funding for atypical organizations to fill this need. It would be beneficial to consider which organizations or institutions are most capable of providing this capacity and which organizations are best positioned to engage with key constituencies on these issues.

It may be useful to consult with decision makers who have an interest in this area to help think about and guide planning, understand the needs of specific constituencies, and consider how best to engage with and support the use of impacts science by these constituencies.

#### 4.4 Focus on the Business of Climate Mitigation and Adaptation

Businesses are an important constituency that may not be regarded as an ally by many of the climate science communications initiatives we surveyed. We heard from decision makers that important constituencies are more likely to believe climate change is occurring if they are aware that businesses are factoring climate into their business planning as a risk or opportunity. Similarly, business can be an important third-party validator of science.

The role of business can go beyond communications—they have the potential to play a larger role as a policy constituency, particularly those with business interests in the issue. A number of business leaders see significant business opportunity in climate change (through both mitigation activities and response to impacts and adaptation) and feel that this has not yet been fully captured as a constituency in the policy arena. While the U.S. Climate Action Partnership (USCAP) and the Carbon War Room include elements of this constituency, additional opportunities may exist. For example, those in USCAP were mostly focused on a specific set of policy initiatives rather than on organizing those with a business case built with climate change in mind. Many, including high-tech companies, equipment manufacturers, chemicals companies, agricultural interests, and energy utilities, described climate issues as central to their business model. Some expressed a sense that

the environmental community has been "squeamish" about using the profit motive as a strategic driver to influence policy. Yet many in the business community see great potential in organizing around this idea, and the potential political business constituency is significant. Organizing on this issue, across sectors, has the potential to advance profit-making solutions, create a more prominent (and different) business voice on climate issues, and open up potential areas of public policy

"Business groups/efforts on sustainability are very effective messengers because they demonstrate that businesses are taking the issue seriously and are beginning to plan for it." development in the future. It is not strictly speaking a communications issue, but it does have a communications dimension.

We did not do a full investigation of work in this area, although some organizations like ClimateWorks, CERES, and the Pew Center on Global Climate Change are pursuing aspects of this approach. USCAP has also played this role in the past.

#### 4.5 Coordinate Strategically Across Initiatives to Bolster Effectiveness and Improve Efficiency

As described in Section 2.1, "attacks" on climate science did not have any real impact on decision makers' views or positions. It did have an impact on media coverage and in constituencies—both of which are important to many decision makers. This may present an opportunity to go beyond a response to the "attacks" in a number of ways. Decision makers are calling for science to support response planning, they are seeking more effective communication with challenging constituencies where the "attacks" actually had an impact, and they seek an opportunity to open up space in the policy arena. Too much focus on a response to the "attacks" on climate science and the email controversy may lead to oversaturation and missed opportunities in other areas.

For example, key constituencies are unlikely to be swayed or affected by more or more effective climate science communications on causal science—they need different information and different messengers. Different information and different messengers may also have benefits with regard to media coverage. For example, a focus on localized science and messengers such as business leaders or a scientist from the local ag/tech university may be more important than overwhelming agricultural constituencies with information from well-trained global experts.

#### 5 Options that Set the Stage for Next Steps

When considering what is next, there are two distinct groups, as described below, with two distinct sets of interests and needs.

- Climate Science Communicators: this group would include a set of environmental groups, funders, and a number of scientists and science organizations that are grappling with how to communicate climate science effectively, particularly causal science.
  - 1. Share and Discuss Report with Interested Funders
  - 2. Facilitate Dialogue to Discuss Findings and Next Generation Science Communications, Supported by Report and Strategic Tools
- Decision Makers: this group would be comprised of a diverse group of decision makers in government and business—and those close to them—most of whom have expressed a keen interest in using climate science as a basis for strategic engagement on climate issues and climate policy.
  - 3. Hold Collaborative Climate Science Dialogue on Causal Science and Other Science Needs

#### 5.1 Share and Discuss Report with Interested Funders

As a first step to test the findings, the sponsors could organize a meeting of a core group of funders and/or organizations that they work with closely on climate issues. This would allow these funders to test the usefulness of these findings in the context of current and planned programs. We also prepared a website that can be used as a planning tool in the future.

To summarize: 1) the sponsors of this research should first consider these findings and potential next steps; and 2) if there is interest in a facilitated strategic dialogue, a first step would be to test stakeholder interest. If there is interest, a convening assessment would be a useful step to ensure real interest and to craft an agenda and format likely to get results.

#### 5.2 Facilitate Dialogue to Discuss Findings and Next Generation Science Communications, Supported by Report Data and Analysis

A case can be made that leaders in the field of climate science communications could benefit from a strategic discussion of the report findings and its implications for current strategic assumptions, targeting, and capacity. Underlying this would be a consideration of the need for greater collaboration, which could lead to efficiencies. In our interviews, a number of those working in this field expressed interest in a follow-up dialogue. However, <u>this needs to be tested</u> on the basis of the findings.

### 5.3 Hold Collaborative Climate Science Dialogue on Causal Science and Other Science Needs

Most decision makers thanked us and expressed an interest in hearing more and staying involved. A number suggested concrete follow-up discussions. Many decision makers expressed that although the national/international politics are unlikely to change for the next two to six years, there is a sense of a real appetite for a non-partisan, constructive, programmatic dialogue and exploration of issues that could open up new possibilities. If this occurs, most decision makers placed an emphasis on taking a careful, strategic approach rather than rushing into a set of poorly planned conversations. And quite a few respondents noted that the pretext for any discussions like this should not be an existing policy prescription. Many referred to these interviews as very useful in that regard—as a first step perhaps. A focus on "usable climate science" is a potential place to start this discussion.

One approach would be to organize a small focus-group discussion, drawn from interviewees and perhaps supplemented, to test actual interest in this discussion and how it would be most effectively organized. Selected foundations would also participate. The usefulness of a facilitated focus group format is that it can be used to test the value of the concept before any formal discussions are organized. The focus group sessions allow for testing of the real value, benefits, and risks, and the potential for a successful outcome.

#### 5.4 A Cautionary Note—What We Did Not Analyze

Many climate science communications initiatives focus their activities on the media in an effort to ensure sufficient coverage and counter media coverage of deniers. To the extent that the media legitimizes climate science doubters and this can be affected or rebalanced by supporting enhanced climate science communications capacity and initiatives, then there may be value in enhanced communications support capacity in this area.

Additionally we did not analyze initiatives that treat the climate email controversy as a political attack on climate science that warrants a political counterattack. Some in the climate communications field make a strong case for this, but because this did not register with decision makers as a need and it is outside of the mandate of RESOLVE and this research, we did not do any further analysis.

# Appendix A: List of Climate Science Communications Initiatives Included in the Landscape Analysis

Organization	Description <sup>14</sup>	Website
350.org	350.org is building a global grassroots movement to solve the climate crisis. Our online campaigns, grassroots organizing, and mass public actions are led from the bottom up by thousands of volunteer organizers in over 188 countries.	http://www.350.o rg/
Alliance for Climate Education	ACE is the national leader in high school climate science education. We're an award-winning national nonprofit dedicated to educating America's high school students about the science behind climate change and inspiring them to do something about it—while having fun along the way.	http://www.acesp ace.org/
American Geophysical Union (AGU), Climate Q&A Service	Our project mission is to enable high-quality climate science reporting by connecting the media with an email service staffed by expert climate scientists with quick turnaround and peer collaboration. The Q&A Service extended pilot ended on 1 March, 2011 and is currently on temporary hiatus while the program is being overhauled.	<u>https://sites.googl</u> <u>e.com/site/agucli</u> <u>mateqaservice/</u>
American Meteorological Society (AMS), Climate Policy	ClimatePolicy is a commentary that explores aspects of climate change that relate to our policy choices. Policy choices will likely serve the interests of society most effectively if they are grounded in the best available knowledge and understanding. Therefore, we will promote objective understanding of climate change related issues rather than specific policy options.	<u>http://climatepoli</u> <u>cy.org/?page_id=2</u>
American Meteorological Society (AMS), Journals	The American Meteorological Society promotes the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences and the advancement of their professional applications. Founded in 1919, AMS has a membership of more than 14,000 professionals, students, and weather enthusiasts. AMS publishes nine atmospheric and related oceanic and hydrologic journals — in print and online — sponsors more than 12 conferences annually, and offers numerous programs and services.	http://www.amet soc.org/
BiPartisan Policy Center	The Bipartisan Policy Center (BPC) drives principled solutions through rigorous analysis, reasoned negotiation, and respectful dialogue.	http://www.bipar tisanpolicy.org/
Carbon Brief, The	Carbon Brief fact-checks stories about climate science and energy online and in the press. We provide briefings on the people and organizations talking about climate change, and we produce background materials on science issues and news stories. We are a service for journalists and the online climate community. Our team of researchers will provide a rapid response service for climate science stories. We go straight to peer-reviewed science and the relevant scientists to get their opinions. Right now we are in the early stages of developing the site.	http://www.carbo nbrief.org/

<sup>&</sup>lt;sup>14</sup> All descriptions are copied directly from the initiatives'/organization's websites. These are included to provide a rough picture of the focus of each initiative/organization but are not intended to provide a complete overview.

Climate Adaptation Knowledge Exchange (CAKE)	Climate Adaptation Knowledge Exchange (CAKE) is a joint project of Island Press and EcoAdapt. It is aimed at building a shared knowledge base for managing natural systems in the face of rapid climate change. CAKE brings together EcoAdapt's recognized leadership in developing the concepts and practices of climate adaptation with Island Press's 27 years as the leading publisher of solutions-based environmental information to offer the most valuable, up-to-date, and authoritative materials on the subject. Just as importantly, it is intended to help build an innovative community of practice. It helps users to get beyond the limitations of their time and the unwieldy thicket of books, papers and articles by: - Vetting and clearly organizing the best information available, - Building a community via an interactive online platform, - Creating a directory of practitioners to share knowledge and strategies, and - Identifying and explaining data tools and information available from other sites.	http://www.cakex .org/about
Climate Central	Climate Central is an independent, non-profit journalism and research organization. We are dedicated to helping mainstream Americans understand how climate change connects to them, and arming our audiences with the knowledge they need to make informed decisions about their future.	http://www.clima tecentral.org/
Climate Change	The Climate Change Education Partnership (CCEP) program	https://sites.googl
Educational Partnership <sup>15</sup>	seeks to establish a coordinated national network of regionally- or thematically-based partnerships devoted to increasing the adoption of effective, high quality educational programs and resources related to the science of climate change and its impacts.	e.com/site/ccedpa rtner/
Climate Change Media Partnership	Internews, Panos and IIED have joined forces to support developing world journalism and perspectives from the heart of the international climate negotiations. Journalists from Asia, Asia-Pacific, Africa, the Middle East, the Caribbean and Latin America will take part in the climate change media partnership fellowship programme designed to improve media coverage of climate change issues in developing countries.	<u>http://www.clima</u> <u>temediapartnershi</u> <u>p.org/about/</u>
Climate Communication	Publicize Climate Change: We publicize and illuminate the latest climate research in plain language, making the science more accessible to the public and policy makers. Examples include our primer on climate change and our feature on extreme weather and its connections to climate change. Support Scientists: We support scientists in improving their communication and outreach. We offer workshops in communication skills at professional meetings and labs, and assistance in preparing accessible materials for non-scientists. Assist Journalists: We help journalists gather reliable scientific information and identify experts. We help make climate change science available and comprehensible to the media and to the public. The assistance we can offer includes preparing accessible materials, organizing informational events, and offering one-on-one consultation to provide journalists with the most credible science.	http://www.clima tecommunication. org/

<sup>&</sup>lt;sup>15</sup> This initiative is focused on journalists outside the U.S.; however, the group does work with journalists from the U.S.

Climate Crisis (An Inconvenient Truth)	A campaign for An Inconvenient Truth; run by TakePart; TakePart is the digital division of Participant Media, whose slate of films includes An Inconvenient Truth, The Cove, Food, Inc., Waiting for Superman, and Page One: Inside the New York Times. TakePart produces this website, with a daily cycle of original articles and videos that inspire people to get involved. We believe that compelling stories and provocative information creates curiosity, builds awareness and propels people to make positive social change in their everyday lives. TakePart also provides services – from custom content creation to campaign building – to partners wishing to bolster their audiences with a message of social change.	http://www.clima tecrisis.net/
The	key decision makers, heighten international awareness of climate change, and identify practical ways of achieving significant emissions reductions. This has been done through several different media including symposia, conferences, roundtables, and special briefings.	http://www.clima te.org/about/inde x.html
Climate Leadership Initiative, The Resource Innovation Group	The Social Capital Project aims to increase public support and engagement in environmental and climate policies and programs. In conjunction with its growing network of practitioners from nonprofits, government, and business, the Social Capital Project develops and promotes best practices in environmental communications and behavior change through research efforts, training program, pilot public engagement projects and by providing technical services.	http://www.there sourceinnovationg roup.org/climate- leadership- initiative/
Climate Literacy and Energy Awareness Network	The CLEAN project, a part of the National Science Digital Library, provides a reviewed collection of resources coupled with the tools to enable an online community to share and discuss teaching about climate and energy science.	<u>http://cleanet.org</u> ∠
Climate Literacy Network	The Climate Literacy Network is an informal group of scientists, educators, policy makers, community leaders, students, and citizens engaged in fostering Climate Literacy in the US and abroad. The Climate Literacy Network provides a forum for organizations, agencies and individuals to collaborate for climate education. Members share ideas, coordinate efforts, promote policy reform, develop learning resources and support integration of climate literacy into formal and informal education venues. Initiatives of the Climate Literacy Network (CLN) feature accurate scientific information, engaging learning experiences, and multiple pathways to reach broad and diverse audiences, in both formal and informal venues.	http://cleanet.org /cln/42319.html
Climate Nexus	Climate Nexus is a new initiative based in New York (with significant networking capabilities in Washington) that will focus on climate and clean energy communications. The imitative, a sponsored project of Rockefeller Philanthropy Advisors, will work closely with an established network of science, technology, public health, clean energy and environmental organizations on climate and clean energy issues and solutions.	http://climatenex us.org/
Climate Progress, Center for American Progress	Joe Romm is a Fellow at American Progress and is the editor of Climate Progress, which New York Times columnist Tom Friedman called "the indispensable blog" and Time magazine named one of the 25 "Best Blogs of 2010."	http://thinkprogr ess.org/romm/iss ue/

Climate Reality Project (previously Alliance for Climate Protection)	The Climate Reality Project is bringing the facts about the climate crisis into the mainstream and engaging the public in conversation about how to solve it. We help citizens around the world discover the truth and take meaningful steps to bring about change. Founded and chaired by Al Gore, Nobel Laureate and former Vice President of the United States, The Climate Reality Project has more than 5 million members and supporters worldwide. It is guided by one simple truth: The climate crisis is real and we know how to solve it.	http://climatereal ityproject.org/
Climate Science Rapid Response Team (CSRRT)	The Climate Science Rapid Response Team is a match-making service to connect climate scientists with lawmakers and the media. The group is committed to providing rapid, high-quality information to media and government officials.	<u>http://www.clima</u> <u>terapidresponse.o</u> <u>rg/</u>
Climate Science Watch	Climate Science Watch is a nonprofit public interest education and advocacy project dedicated to holding public officials accountable for using climate research effectively and with integrity in dealing with the challenge of global climate disruption. Our primary focus is on U.S. national policy developments. Drawing on an extensive network and decades of experience in Washington, DC, CSW investigates and diagnoses the use and misuse of climate change research and assessments in the arenas of politics and policymaking. This website is a vehicle for our commentary, documentation, and reform advocacy.	http://climatescie ncewatch.com/
Climate Signals	An on-line database of climate change impact reports crowd- sourced through social bookmarking	<u>http://climatesign</u> <u>als.org/</u>
ClimateWorks Foundation	The ClimateWorks Foundation supports public policies that prevent dangerous climate change and promote global prosperity. ClimateWorks partners with an international network of affiliated organizations—the ClimateWorks Network—to support smart policies in the geographic regions and economic sectors that have the greatest potential for reducing greenhouse gas emissions. The Network's goal is to inspire adoption of effective policies to limit annual global greenhouse gas emissions to 44 billion metric tons by the year 2020 (a reduction of 17 billion metric tons, or about 25 percent below business-as-usual projections), and 35 billion metric tons by the year 2030 (50 percent below projections).	http://www.clima teworks.org/
Columbia University, Center for Research on Environmental Decisions, Earth Institute <sup>16</sup>	CRED is an interdisciplinary center that studies individual and group decision making under climate uncertainty and decision making in the face of environmental risk. CRED's objectives address the human responses to climate change and climate variability as well as improved communication and increased use of scientific information on climate variability and change.	<u>http://cred.colum</u> <u>bia.edu/about/</u>
Columbia University, International Research Institute for Climate and Society	We use a science-based approach to enhance society's capability to understand, anticipate and manage the impacts of climate in order to improve human welfare and the environment, especially in developing countries.	<u>http://portal.iri.co</u> <u>lumbia.edu/portal</u> <u>/server.pt</u>

<sup>&</sup>lt;sup>16</sup> Note that the academic-focused initiatives listed on our list do not represent a comprehensive list of all university programs focused on climate science. This list highlights several university initiatives focused on climate change communications.

Communicating	ASTC's Communicating Climate Change works with science	http://astc.org/igl
Climate Change	centers and partnering scientific research sites to develop local	<u>o/c3/</u>
(C3), Association of	indicators of climate change in 12 locations across the United	
Science-Technology	States.	
Centers	Our project fosters innovative partnerships between research	
	centers, the media, and science centers, supporting the	
	development of citizen science programs, public forums, and	
	other activities	
Cool the Earth	Cool The Earth is a free, ready-to-run climate change assembly	http://www.coolt
	program that educates K-8 students and their families about	<u>heearth.org/our-</u>
	climate change and inspires them to take simple actions to	<u>program/</u>
	reduce their carbon emissions. The program is successful	
	because it's fun and empowering for the kids, and their	
-	enthusiasm is contagious!	
Cornell University,	This website is an interdisciplinary effort to provide a one-stop	<u>http://blogs.corne</u>
Cornell Climate	portal to the climate change research, teaching, and outreach	<u>ll.edu/climatechan</u>
Change	and extension programs at Cornell University, under the	<u>ge/about/</u>
	guidance of the Atkinson Center for a Sustainable Future's	
	Climate Change Program and Focus Group (CCFG) and the	
	Cornell University Climate Change Program Work Team (PWT).	
Daily Climate,	The Daily Climate works to increase public understanding of	http://wwwp.dail
Environmental	climate disruption, including its scope and scale, potential	<u>yclimate.org/</u>
Health Sciences	solutions and the political processes that impede or advance	
	them. The Daily Climate does not espouse a political point of	
	view on the news but instead reports the truth to the best of	
	our ability. Editorial integrity is the foundation of our mission.	
DeSmogBlog	The DeSmogBlog Project began in January 2006 and quickly	http://www.desm
	became the world's number one source for accurate, fact based	ogblog.com/
	information regarding Global Warming misinformation	
	campaigns. Our articles and stories are routinely nighlighted in	
	the world's most popular news blogs: New York Times	
	Dolearth, Humngton Post, Dany Kos, ThinkProgress, and	
Dat Farth Nour Varle	I reenugger.	http://dotoouth.hl
Dot Earth, New York	In Dot Earth, which recently moved from the news side of The	<u>nttp://dotearth.bl</u>
Times	filmes to the Opinion section, Andrew C. Revkin examines	ogs.nytimes.com/
	Conseived in part with support from a John Simon Cugranhaim	
	Conceived in part with support from a joint Simon Guggennenn	
	suburbia to Siberia. The blog is an interactive evploration of	
	trends and ideas with readers and experts	
Down to Earth	University of California, Diverside geographics.	http://powero.om
Climate Science	awarded a three year grant by NASA to develop inpovative	ucr odu /2402
Project	annroaches for communicating climate change science to	<u>uci.cuu/2472</u>
TIOJECE	undergraduates and high school students in Southern	
	California The "Down to Earth Climate Science Project	
	Engaging tomorrow's leaders today" will use real-world $N\Delta S\Delta$	
	data sources to help both IIC Riverside undergraduates and	
	local high school students understand and communicate the	
	science integral to climate change research	
L	serence integral to enhate change research.	l

Earth Journalism Network <sup>17</sup>	Internews Network and Internews Europe developed the Earth Journalism Network (EJN) to empower and enable journalists from developing countries to cover the environment more effectively. EJN establishes networks of environmental journalists in countries where they don't exist, and builds their capacity where they do, through training workshops and development of training materials, support for production and distribution, and dispersing small grants	http://earthjourn alism.net/
Eco-Accountability Project	NA	NA
Environmental Defense Fund (EDF), Climate 411 <sup>18</sup>	We're working to reduce the pollution that causes global warming — locally, nationally and globally. Climate 411 is the voice of the experts at Environmental Defense Fund, providing plain-English explanations of climate change science, technology, policy, and news.	http://blogs.edf.or g/climate411/
Environmental Law & Policy Center	The Environmental Law & Policy Center is the Midwest's leading public interest environmental legal advocacy and eco- business innovation organization. We develop and lead successful strategic environmental advocacy campaigns to improve environmental quality and protect our natural heritage. We are public interest environmental entrepreneurs who engage in creative business deal making with diverse interests to put into practice our belief that environmental progress and economic development can be achieved together.	http://elpc.org/
Environmental Protection Agency (EPA), Climate Change	EPA's climate change programs and activities are an integral part of the Agency's mission to protect human health and the environment. EPA's Climate Change Web site offers the public the most current and accurate information on the broad issue of climate change.	http://www.epa.g ov/climatechange /index.html
Evangelical Environmental Network	A ministry dedicated to the care of God's creation. EEN seeks to equip, inspire, disciple, and mobilize God's people in their effort to care for God's creation.	http://creationcar e.org/
Friends of the Earth	Friends of the Earth is working for aggressive legislation in the United States that quickly reduces and eventually ends our country's emissions of heat-trapping gasses. We are also participating in Friends of the Earth International's efforts to bring the international community together behind a strong global climate agreement, without which this problem cannot be solved.	http://www.foe.o rg/global- warming
George Mason University, Center for Climate Change Communication	Our research center was created to conduct unbiased social science research that will facilitate such public engagement. We use social science research methods – experiments, surveys, indepth interviews and other methods – to find ways of effectively engaging the public and policy makers in the problem, and in considering and enacting solutions.	http://www.clima techangecommuni cation.org/

<sup>&</sup>lt;sup>17</sup> This initiative is focused on journalists outside the U.S.; however, the group does work with journalists from the U.S. <sup>18</sup> This list includes many national environmental NGOs that are active on climate change and communicate climate science information. However, this list should not be considered comprehensive relative to environmental NGOs active on climate change.

Global Learning and Observations to Benefit the Environment Program (GLOBE)	The Global Learning and Observations to Benefit the Environment (GLOBE) program is a worldwide hands-on, primary and secondary school-based science and education program. GLOBE's vision promotes and supports students, teachers and scientists to collaborate on inquiry-based investigations of the environment and the Earth system working in close partnership with NASA, NOAA and NSF Earth System Science Projects (ESSP's) in study and research about the dynamics of Earth's environment.	http://globe.gov/
Google Science Communication Fellows	In an effort to foster a more open, transparent and accessible scientific dialogue, we've started a new effort aimed at inspiring pioneering use of technology, new media and computational thinking in the communication of science to diverse audiences. Initially, we'll focus on communicating the science on climate change. We're kicking off this effort by naming 21 Google Science Communication Fellows.	http://blog.google .org/2011/02/ma king-sense-of- science- introducing.html
Greenpeace	Greenpeace is the leading independent campaigning organization that uses peaceful protest and creative communication to expose global environmental problems and to promote solutions that are essential to a green and peaceful future.	http://www.green peace.org/usa/en /campaigns/globa l-warming-and- energy/science/
Grist, Climate Tab <sup>19</sup>	Grist has been dishing out environmental news and commentary with a wry twist since 1999 which, to be frank, was way before most people cared about such things. Now that green is in every headline and on every store shelf (bamboo hair gel, anyone?), Grist is the one site you can count on to help you make sense of it all.	http://www.grist. org/
InsideClimate News (previously SolveClimate)	InsideClimate News is a non-profit, non-partisan news organization that covers clean energy, carbon energy, nuclear energy and environmental science—plus the territory in between where law, policy and public opinion are shaped. Our mission is to produce clear, objective stories that give the public and decision makers the information they need to navigate the heat and emotion of climate and energy debates.	http://insideclima tenews.org/about- insideclimate- news
Institute for Science Communication and Policy Development, The Heinz Center	The Heinz Center's Institute for Science Communication and Policy Development seeks to improve the capacity of science to inform the creation of sound environmental policy in the U.S. by providing training to scientists, policy makers and members of the media on conveying and understanding the science of climate change.	http://vimeo.com /27018486

<sup>&</sup>lt;sup>19</sup> Grist was interviewed so are included in our initiatives list. However, note that there are many other news organizations similar to Grist that cover climate change issues among other environmental issues (such as AlterNet, Earth Island Journal, Conservation Magazine, Ecologist, Environmental Research Web, Mother Jones, and Green Futures).

Intergovernmental Panel on Climate Change (IPCC)	The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. The IPCC is a scientific body. It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. It does not conduct any research nor does it monitor climate related data or parameters.	http://www.ipcc.c h/
Media Matters	Media Matters for America is a Web-based, not-for-profit, 501(c)(3) progressive research and information center dedicated to comprehensively monitoring, analyzing, and correcting conservative misinformation in the U.S. media.	<u>http://mediamatt</u> <u>ers.org/</u>
National Academy of Sciences (NAS)	The National Academy of Sciences (NAS) is an honorific society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare.	http://www.naso nline.org/site/Pag eServer
National Aeronautics and Space Administration (NASA), Global Climate Change	NASA conducts its work in three principal organizations, called mission directorates: Aeronautics: pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth. Human Exploration and Operations: focuses on International Space Station operations and human exploration beyond low Earth orbit. Science: explores the Earth, solar system and universe beyond; charts the best route of discovery; and reaps the benefits of Earth and space exploration for society.	http://climate.nas a.gov/
National Center for Atmospheric Research (NCAR)	The National Center for Atmospheric Research (NCAR) is a federally funded research and development center devoted to service, research and education in the atmospheric and related sciences. NCAR's mission is to understand the behavior of the atmosphere and related physical, biological and social systems; to support, enhance and extend the capabilities of the university community and the broader scientific community – nationally and internationally; and to foster transfer of knowledge and technology for the betterment of life on Earth. The National Science Foundation is NCAR's primary sponsor, with significant additional support provided by other U.S. government agencies, other national governments and the private sector.	http://ncar.ucar.e du/
National Ecological Observatory Network	The National Ecological Observatory Network (NEON) will collect data across the United States on the impacts of climate change, land use change and invasive species on natural resources and biodiversity. NEON is a project of the U.S. National Science Foundation, with many other U.S. agencies and NGOs cooperating.	http://www.neoni nc.org/

National Oceanic and Atmospheric Administration (NOAA) Climate Services	With the rapid rise in the development of Web technologies and climate services across NOAA, there has been an increasing need for greater collaboration regarding NOAA's online climate services. The drivers include the need to enhance NOAA's Web presence in response to customer requirements, emerging needs for improved decision-making capabilities across all sectors of society facing impacts from climate variability and change, and the importance of leveraging climate data and services to support research and public education. To address these needs, NOAA embarked upon an ambitious program to develop a NOAA Climate Services Portal (NCS Portal). Our goal is for the Portal to become the "go-to" website for NOAA's climate data, products, and services for all users.	http://www.clima te.gov/#climateW atch
National Oceanic and Atmospheric Administration (NOAA) Regional Climate Centers	NOAA's Regional Climate Centers (RCCs) are a federal-state cooperative effort. The RCC Program is managed by the NOAA's National Climatic Data Center (NCDC). The six centers that comprise the RCC Program are engaged in the timely production and delivery of useful climate data, information and knowledge for decision makers and other users at the local, state, regional and national levels. The RCCs support NOAA's efforts to provide operational climate services while leveraging improvements in technology and collaborations with partners to expand quality data dissemination capabilities.	http://www.ncdc. noaa.gov/oa/clim ate/regionalclimat ecenters.html
National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Climate Services	To ensure NWS has the capacity to develop and deliver reliable climate services integrated with weather and water information through user engagement, policy development, data stewardship, incorporation of research into operations, training, education, and outreach in collaboration with partners.	http://www.weat her.gov/om/csd/
National Research Council (NRC)	Our mission is to improve government decision making and public policy, increase public understanding, and promote the acquisition and dissemination of knowledge in matters involving science, engineering, technology, and health. The Research Council's independent, expert reports and other scientific activities inform policies and actions that have the power to improve the lives of people in the U.S. and around the world.	http://dels.nas.ed u/Climate/Climat e- Change/Reports- <u>Academies-</u> Findings
National Resources Defense Council (NRDC)	NRDC works to jumpstart the clean energy future not only here in America, but also in China, where we have worked on energy issues for more than a decade, and in India, where we have established a new program to promote clean energy policies.	http://www.nrdc. org/globalwarmin g/
National Science Foundation (NSF)	The National Science Foundation (NSF) is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense" With an annual budget of about \$6.9 billion (FY 2010), we are the funding source for approximately 20 percent of all federally supported basic research conducted by America's colleges and universities.	http://www.nsf.g ov/news/special r eports/climate/

Nature <sup>20</sup>	Nature is a weekly international journal publishing the finest peer-reviewed research in all fields of science and technology on the basis of its originality importance interdisciplinary	http://www.natur e.com/
	interest, timeliness, accessibility, elegance and surprising conclusions. Nature also provides rapid, authoritative, insightful and arresting news and interpretation of topical and coming tranda effecting acience, acientiate and the wider public	
Nature Climate Change	Nature Climate Change publishes original research across the physical and social sciences and strives to synthesize interdisciplinary research. The journal follows the standards for high-quality science set by all Nature-branded journals and is committed to publishing top-tier original research in all areas relating to climate change through a fair and rigorous review process, access to a broad readership, high standards of copy editing and production, rapid publication and independence from academic societies and others with vested interests. In addition to publishing original research, Nature Climate Change provides a forum for discussion among leading experts through the publication of opinion, analysis and review articles. It also highlights the most important developments in the field through Research Highlights and publishes original reporting from renowned science journalists in the form of feature articles.	http://www.natur e.com/nclimate/a bout/index.html
Oregon State University, Oregon Sea Grant <sup>21</sup>	Sea Grant has a national goal to provide "relevant and timely information on climate change adaptation" for coastal areas. Oregon Sea Grant works toward that goal using its unique combination of research, education, public engagement and communication. Our basic operating principle is to engage and collaborate with people who would use research-based information to understand and make decisions about the changing climate where they live and work. Some of our projects and products help communities consider how they can adapt to a range of climate change effects. Others focus on specific coastal change effects or on broader climate change education and public engagement.	http://seagrant.or egonstate.edu/the mes/climate/inde x.html
Pew Center on Global Climate Change	The Pew Center on Global Climate Change brings together business leaders, policy makers, scientists, and other experts to bring a new approach to a complex and often controversial issue. Our approach is based on sound science, straight talk, and a belief that we can work together to protect the climate while sustaining economic growth.	http://www.pewc limate.org/
Positioning Green	Positioning Green is about the marketplace of ideas surrounding clean technology and the environment, written by a professional communicator with more than 15 years experience working with business, non-profit and government clients in the sector. Interest in these issues has never been greater, yet communicating them is more challenging than ever. We look at who's getting it right, and how others can improve their game.	http://positioning green.com/

<sup>&</sup>lt;sup>20</sup> Nature and Science are among the most cited research journals on climate change science. They are included in our list because we prompted decision makers for their views on the credibility of these journals during our interviews. However, it should be noted that many other research journals publish climate-related research.

<sup>&</sup>lt;sup>21</sup> This is one example of many Sea Grant programs at universities focused on climate change communications. This is included in our list of initiatives as an example and because they completed the survey.

RealClimate	RealClimate is a commentary site on climate science by working climate scientists for the interested public and journalists. We aim to provide a quick response to developing stories and provide the context sometimes missing in mainstream commentary. The discussion here is restricted to scientific topics and will not get involved in any political or economic implications of the science. All posts are signed by the author(s), except 'group' posts which are collective efforts from the whole team. This is a moderated forum.	http://www.realcl imate.org/
Resource Media	When we first opened our doors in 1998, our organization was just two communications pros with ideas about how to shape the public conversation on conservation and public health issues. Moving from one success to the next and growing our list of clients, we quickly built a reputation for developing top- notch communications strategy and results-driven media outreach campaigns that work. Today, our staff is located in eight offices across the U.S. Resource Media is a 501c3 non-profit organization that relies on a mix of grants and contracts to support our work.	<u>nttp://resource-</u> <u>media.org/</u>
Resources for the Future	Resources for the Future scholars are engaged with the linked issues of energy and climate policy on numerous fronts. Much of the work in this area is conducted within two RFF Centers: the Center for Climate and Electricity Policy and the Center for Energy Economics and Policy. Issues studied include how to cost-effectively constrain greenhouse gas emissions and limit cost uncertainties, strategies for promoting developing country engagement in climate change mitigation, policies to reduce emissions through averted deforestation and afforestation, and the question of climate change adaptation. Additionally, RFF researchers are tackling the question of U.S. energy security by examining options for reducing U.S. dependence on oil, and exploring the environmental and economic issues surrounding greater use of natural gas.	http://www.rff.or g/Focus Areas/Pa ges/Energy and C limate.aspx
Science <sup>22</sup>	Founded in 1880 on \$10,000 of seed money from the American inventor Thomas Edison, Science has grown to become the world's leading outlet for scientific news, commentary, and cutting-edge research, with the largest paid circulation of any peer-reviewed general-science journal. Through its print and online incarnations,	http://www.scien cemag.org/
Science Communications Network	The Science Communication Network (SCN), a private non- profit foundation-supported educational organization, is dedicated to encouraging environmental public health scientists and medical practitioners to contribute to public discussions about their work through the media and thereby elevate the quality and quantity of environmental health reporting.	http://www.scien cecommunication network.org/

<sup>&</sup>lt;sup>22</sup> Nature and Science are among the most cited research journals on climate change science. They are included in our list because we prompted decision makers for their views on the credibility of these journals during our interviews. However, it should be noted that many other research journals publish climate-related research.

Skeptical Science	The goal of Skeptical Science is to explain what peer reviewed science has to say about global warming. Skeptical Science is maintained by John Cook, the Climate Communication Fellow for the Global Change Institute at the University of Queensland. There is no funding to maintain Skeptical Science other than Paypal donations - it's run at personal expense. John Cook has no affiliations with any organisations or political groups. Skeptical Science is strictly a labour of love.	http://www.skept icalscience.com/
Smithsonian Institution, Ocean Portal	A unique, interactive online experience that inspires awareness, understanding, and stewardship of the world's Ocean, developed by the Smithsonian Institution's National Museum of Natural History and more than 20 collaborating organizations.	http://ocean.si.ed u/category/ocean -portal-generated- tags/climate- change-0
The Climate Post, Nicholas Institute for Environmental Policy Solutions, Duke University	The Nicholas Institute for Environmental Policy Solutions at Duke University is pleased to introduce The Climate Post, a weekly (for starters) narrative overview of news, trends, and events that shape the evolving climate mosaic. The Institute is an independent center charged with identifying and helping remove "sticking points" to progress in addressing our many environmental challenges.	http://theclimate post.wordpress.co m/
The Ohio State University, Changing Climate	The OSU Climate Change Outreach Team is a partnership among multiple departments within The Ohio State University. The team's goal is to help localize the climate change issue by bringing related research and resources to residents of Ohio and the Great Lakes region.	<u>http://changingcli</u> <u>mate.osu.edu/</u>
The Project on Climate Science <sup>23</sup>	NA	NA
U.S. Department of Agriculture (USDA), Climate Change Program Office	The Climate Change Program Office (CCPO) operates within the Office of the Chief Economist and functions as the Department- wide coordinator of agriculture, rural and forestry-related global change program and policy issues facing USDA. The Office ensures that USDA is a source of objective, analytical assessments of the effects of climate change and proposed response strategies. The Office also serves as USDA's focal point for climate change issues and is responsible for coordinating activities with other Federal agencies, interacting with the legislative branch on climate change issues affecting agriculture and forestry, and representing USDA on U.S. delegations to international climate change discussions.	<u>http://www.usda.</u> <u>gov/oce/climate_c</u> <u>hange/index.htm</u>
U.S. Fish and Wildlife Service (FWS)	As the nation's principle federal conservation agency, the Service is dedicated to helping reduce the impacts of climate change on fish, wildlife, plants and their habitats.	http://www.fws.g ov/home/climatec hange/
U.S. Forest Service, Climate Change Resource Center	The Climate Change Resource Center (CCRC) is a reference Web site for resource managers and decision makers who need information and tools to address climate change in planning and project implementation	http://www.fs.fed .us/ccrc/

<sup>&</sup>lt;sup>23</sup> This initiative was lead by NRDC; it is winding down and may become a part of Climate Nexus.

U.S. Geological Survey (USGS), Office of Global Change	The USGS strives to understand how the earth works and to anticipate changes in how the earth functions. To accomplish this, USGS science aims to understand the interrelationships among earth surface processes, ecological systems, and human activities. This includes understanding current changes in the context of pre-historic and recent earth processes, distinguishing between natural and human-influenced changes, and recognizing ecological and physical responses to changes in climate.	http://www.usgs. gov/global_chang e/
U.S. Global Change Research Program (USGCRP)	The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. Our Mission: To build a knowledge base that informs human responses to climate and global change through coordinated and integrated federal programs of research, education, communication, and decision support	http://www.globa lchange.gov/about /overview
UN Foundation	We are an advocate for the UN and a platform for connecting people, ideas and resources to help the United Nations solve global problems. We build partnerships, grow constituencies, mobilize resources and advocate policy changes to support the UN's work for individual and global progress.	<u>http://www.unfo</u> <u>undation.org/</u>
Union of Concerned Scientists (UCS)	For more than 20 years, UCS has worked with leading experts to educate United States decision makers and the public about global warming, and implement practical solutions at international, national, regional, and state levels.	<u>http://www.ucsus</u> a.org/global_war ming/
University Corporation for Atmospheric Research (UCAR)	The University Corporation for Atmospheric Research serves as a hub for research, education, and public outreach for the atmospheric and related Earth sciences community.	http://www2.ucar .edu/news/backgr ounders/understa nding-climate- change-global- warming
University of Alaska, Fairbanks, Alaska Center for Climate Assessment and Policy	The mission of the Alaska Center for Climate Assessment and Policy is to assess the socio-economic and biophysical impacts of climate variability in Alaska, make this information available to local and regional decision makers, and improve the ability of Alaskans to adapt to a changing climate.	<u>http://ine.uaf.edu</u> <u>/accap/</u>
University of Colorado, Boulder, Learn More About Climate	An initiative of CU-Boulder's Office for University Outreach in the Division of Continuing Education and Professional Studies, LearnMoreAboutClimate.colorado.edu seeks to: - extend the university's vast scientific expertise to raise awareness about climate change, - inspire an informed dialogue about climate change among Coloradans, and - encourage Coloradans to make lifestyle changes that contribute to the health of our state and planet.	http://learnmorea boutclimate.colora do.edu/
World Resources Institute	WRI's goal is to protect the global climate system from further harm due to emissions of greenhouse gases and help humanity and the natural world adapt to unavoidable climate change	http://www.wri.o rg/climate

World Wildlife Fund	Climate change has been a priority for WWF for over 20 years	http://www.worl
(WWF)	as climate disruption poses a fundamental threat to the	<u>dwildlife.org/clim</u>
	vulnerable places, species and people WWF seeks to protect.	<u>ate/</u>
	To adequately slow climate change we must urgently reduce	
	global greenhouse gas emissions. We are leveraging the power	
	of WWF's network of organizations around the world to build	
	support for global climate action.	
Yale University,	The Yale Project on Climate Change Communication works to:	http://environme
Project on Climate	1) Advance public understanding and engagement with climate	<u>nt.yale.edu/climat</u>
Change	change science and solutions, and;	<u>e/</u>
Communications	2) Catalyze action by the general public and leaders of	
	government, business, academia, and the media through	
	improved knowledge and understanding.	

#### Appendix B: List of Decision-maker and Landscape Interviewees

#### **Decision-maker Interviewees**

Ernie Shea (25X'25); Jimmy Daukas (American Farmland Trust); Ed Mongan (BHP-Billiton); John Disharoon (Caterpillar Inc.); Mindy Luber (CERES); Tim Greeff (Clean Economy Network); Jim Connaughton (Constellation Energy); Mark Fegly and Mark Heintz (Deckers Outdoor Company); Dawn Rittenhouse (DuPont); James Fahn (Earth Journalism Network, Internews); Howard Lerner (Environmental Law & Policy Center); Roxanne Decyk (formerly VP for Sustainability at Shell Oil); Bob Inglis (Former Congressman, R-SC); Stephen Harper (Intel); Bill Northey (Iowa Secretary of Ag); David Rockland (Ketchum Communications); Michael Bradley (M.J. Bradley & Associates); Rebecca Rubin (Founder, Marstel-Day); Kathleen Frangione (McBee Strategic); S. Bill Becker (Nat'l Assoc. of Clean Air Agencies); Bob Ehart (Nat'l Assoc. of State Departments of Agriculture); Tim Profeta (Nicholas Institute for Environmental Policy Solutions); Dan Lashoff (NRDC); Katharine Jacobs (Office of Science and Technology Policy, Executive Office of the President); Stephanie Sandlin (Olsson Frank Weeda Terman Bode Matz PC); Mark Didden (Phillips); Frank Nutter (Reinsurance Association of America); Ana Unruh Cohen (Rep. Markey); Lynn Scarlett (Resources for the Future); Ralph Becker (Salt Lake City Mayor); Amit Ronen (Sen. Cantwell); Tom Dower (Sen. Cmte. on Commerce; Sen. Rockefeller); Franz Wuerfmannsdobler (Sen. Coonz); Sarah Neimeyer (Sen. Durbin); Jonathan Black (Sen. Energy and Natural Resources Cmte.); Bob Simon (Sen. Energy and Natural Resources Cmte.; Sen. Bingaman); McKie Campbell (Sen. Energy and Natural Resources Cmte.; Sen. Murkowski); Chris Miller (Sen. Reid); Patrick Woodcock (Sen. Snowe); Alison Taylor and David McIntosh (Siemens); Rich Halvey (Western Governors Association)

#### Landscape Interviewees

Paul Bledsoe (BiPartisan Policy Center); Ben Strauss and Heidi Cullen, and Paul Hanle (Climate Central); Jeff Nesbit (Climate Nexus); Kalee Kreider and Kevin Curtis (Climate Reality Project, previously Alliance for Climate Protection); Hal Harvey and Matt Lewis (ClimateWorks Foundation); Peter Dykstra (Daily Climate, Environmental Health News); John Passacantando (Eco-Accountability Project); David Tuft (Energy Foundation); Howard Learner (Environmental Law & Policy Center); Ed Maibach (George Mason University, Center for Climate Change Communication); Dave Roberts and Chip Giller (Grist, Climate Tab); Eric Brown (Hewlett Foundation); Kathleen Welch (Consultant); Dan Lashof (National Resources Defense Council); Dr. Jay Gulledge (Pew Center on Climate Change); Jon Coifman (PRCG Strategic Communications, Positioning Green); Këri Bolding, Cat Lazaroff, and Kirk Brown (Resource Media); Pete Myers and Amy Kostant (Science Communications Network); Aaron Huertas and Rebecca Thibault (Union of Concerned Scientists); Marty Spitzer and Nick Sundt (World Wildlife Fund); Tony Leiserowitz (Yale University, Project on Climate Change Communications)